JOURNAL
OF THE
AMERICAN WATER WORKS ASSOCIATION

VOL. 33, NO. 6 JUNE, 1941

Engineering Library

JUN 16 1941

In this Issue

Toronto's New Water Plant
Sanderson, Allan

Reservoir Silting *Brown*

Distribution System Extensions *Berry, Anderson*

Insurance Requirements *Goodhue*

Operator-Salesman Relationship *Nalefski, Alt*

Utility Defense Measures
Geupel, Gledhill, McCanlis

Pollution—Measurement and Control
Watson, Lackey, Hatfield

61st Annual A.W.W.A. Convention
Toronto, Canada—June 22–26

Published Monthly
at Mount Royal and Guilford Avenues, Baltimore, Md.
by the
AMERICAN WATER WORKS ASSOCIATION
22 EAST 40TH ST., NEW YORK

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70 years ago the removable barrel was a *basic* improvement in hydrant design. Today it is still the *basic* advantage of the Mathews Hydrant. Here's why:

❶ A smashed barrel, unscrewed and replaced with a spare barrel, makes an immediate repair without digging.

❷ Inserting a spare barrel allows inspection or overhaul in the shop of all operating parts, including main and drain valve *seats*.

❸ Without digging, modern steamer nozzles can be added, and grade levels can be changed up or *down*.

❹ The barrel, surrounded by its loose protection case, gives double impact strength and prevents frost-heaved ground from straining the hydrant.

SO—if you are buying new hydrants, specify Mathews. If you *have* Mathews, check your supply of spare barrels this week.

MATHEWS HYDRANTS

Made by R. D. WOOD COMPANY

Manufacturers of Sand Spun Pipe (centrifugally cast in sand molds) and R. D. Wood heavy-duty gate valves for water works

400 CHESTNUT STREET, PHILADELPHIA, PA.

PUBLISHED MONTHLY AT MOUNT ROYAL AND GUILFORD AVENUES, BALTIMORE, MD.
Entered as second class matter April 10, 1914 at the Post Office at Baltimore, Md., under the Act of August 24, 1912. Accepted for mailing at a special rate of postage provided for in section 1103, Act of October 3, 1917; authorized August 6, 1918
Made in United States of America

News of the Field

Every skilled water works man who is drawn into the army for training is good material for a very important part of the service that it takes to make a training camp function. Every cantonment with its thousands of troops in training is in effect a city.

Roads, water supply, sewers, electric service, buildings all require operating personnel. A regular fire department is set up. The maintenance problems require trained men to restore service. In the last war, each cantonment area had its "Utility" Company, with its officers and enlisted group. In this officer group were City Managers, Water Works Engineers, Electrical Engineers, Trained Firemen and the like. It is worthwhile work, it has to be done and a trained water works man who is drawn into service can render top notch service if he is fitted into this utility work.

The changes which have gone on in Washington during December have made it necessary for the A. W. W. A. office to develop new paths of contact with the directing army personnel. But already there are at hand the names and records of competent water works engineers and officers who have been taken into army service. Their competency for utility work is being brought to the attention of the responsible executives in Washington.

It is highly important that any and every member of the A. W. W. A. who knows of a water works man who has entered the service write the A. W. W. A. headquarters. Record the name and present rank of the man, his present military organization and address, tell what he did in water works and give any useful information about his education, etc. All of this information will be given to the officers in Washington, who are setting up the utility organizations in the camps. The result will be that water works men in training can at least be given an opportunity to give important service in their field of experience.

It is thoroughly worthwhile. Do your part.

Emergency defense activities have developed a need for certain industrial standards not now available. The American Standards Association recognizes this fact and its Council at the annual meeting on December 11, 1940 approved the preparation of "American Defense Emergency Standard Specifications."

Procedures and specifications of an emergency nature will be prepared under a special plan that will expedite their production and make them available very promptly. The system of checks and balances which has existed in the American Standards Association from its inception will be temporarily set aside in these special cases. This will make it possible for the Federal Government and American industry to have emergency

(Continued on page 2)

(*Continued from page 1*)

standards and specifications as a guide for the production of defense material. At the close of the present emergency program any documents which have been prepared under this procedure will either be withdrawn or re-edited in accordance with the routine procedure of the American Standards Association.

Alexander Bell, Pacific Coast Manager, Wallace & Tiernan Co., Inc., died in San Francisco on December 10, at the age of 58, after nine months' illness.

In addition to his activities as an executive of the Wallace & Tiernan Co., he held many positions of importance in professional organizations on the West Coast. He had served on numerous committees and had been active in the affairs of the California Section where he was long known for his perennial service as Master of Ceremonies at the Section's Water Purification Division banquets. He had only recently completed a term as President of the California Sewage Works Association.

One of his associates has said of him: "Alexander Bell was an unusual man. Though dynamic, ambitious and energetic, continually driving himself and others to greater and better efforts, he was always kindly and pleasant. He was intensely loyal to his Company and his associates, irrespective of their relative rank. His loyalty to the employees working immediately under his direction was outstanding; and that loyalty from him coupled with his kindly consideration of their personal welfare bred in his juniors a degree of affection, respect and loyalty that is seldom duplicated in any organization anywhere."

He joined the Wallace & Tiernan Co. in 1919. Failing to obtain an assignment with the field and sales staff, he secured employment in the Assembly Department at forty cents an hour. There his mechanical ability stood him in such good stead that before many months he was out in the field on installation and maintenance work and soon after he went to San Francisco to organize a new district office for the Wallace & Tiernan Co.

The Division of State and Local Co-operation of the National Defense Advisory Commission at the present time lists state advisory councils in 33 states and the District of Columbia. Business men interested in forming such committees for the states which do not already have such organizations may obtain advice and assistance by writing to the Division of State and Local Co-operation, National Defense Advisory Commission, Washington, D. C. (See Directory on page 4.)

(*Continued on page 4*)

J. C. LINDSEY

Water Operations Supt., Seattle Water Dept.
Seattle, Washington

writes:

In 1931 the City of Seattle installed approximately 10,000 feet of 42-inch cast iron pipe to supply our large north and northwest intermediate districts. For the 9 years this line has been in service there has been *no maintenance cost whatsoever.* We have 1000 miles of distribution mains in our system, most of which are cast iron. Our cast iron distribution mains have been satisfactory and very low in maintenance cost.

(*Signed*) *J. C. Lindsey*

LOW MAINTENANCE is an economy factor in cast iron pipe that is usual, rather than exceptional, in water works experience. An impartial survey among nearly 200 water works superintendents shows that the maintenance cost of cast iron pipe is far below that of any other pipe material which has been in use long enough for the recording of conclusive data.

CAST Q IRON

Look for the "Q-Check" Registered trade mark.
Cast iron pipe is made in diameters from 1 1/4 to 84 inches.

The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois

CAST IRON PIPE
PUBLIC TAX SAVER NO. 1

(*Continued from page 2*)

Directory of State Defense Councils

Arizona (Phoenix)
State Council of Defense
Arizona Club
Arkansas (Little Rock)
Arkansas Defense Committee
California (Berkeley)
State Council of Defense
2121 Allston Way
Connecticut (Hartford)
State Council for National Defense
Room 217, State Office Bldg.
Delaware (Wilmington)
State Council for National Defense
Mullin Building
District of Columbia
Council of Defense
Room 306 District Bldg.
Florida (Tallahassee)
State Council of Defense
Georgia (Atlanta)
State Committee for National Defense
75 Marietta St.
State Commander
State Defense Corps
Indiana (Indianapolis)
Governor's Emergency Defense Council
State Capitol
Iowa (Des Moines)
Iowa Industrial Resources and Defense Council
℅ Des Moines Water Works
Kansas (Topeka)
Kansas Council of Defense
State House
Louisiana (New Orleans)
National Defense Council of Louisiana
Whitney Building
Maine (Augusta)
Military Defense Commission
State House
Maryland (Baltimore)
State Council of Defense and Resources
1006 Union Trust Bldg.
Massachusetts (Boston)
Mass. Committee on Public Safety
State House
Michigan (Detroit)
Michigan National Defense Council
2864 Penobscot Bldg.
Minnesota (St. Paul)
State Defense Coordinator
Room 266, State Capitol
Missouri (St. Louis)
State Industrial Commission
511 Locust St.
Nevada (Carson City)
State Defense Committee
New Hampshire (Laconia)
State Defense Committee on Industrial Cooperation
New Jersey (Trenton)
New Jersey Defense Council
Room 1406, Trenton Trust Co. Bldg.
New Mexico (Roswell)
State Council of National Defense
℅ New Mexico Military Institute
New York (Albany)
State Council of National Defense
State Capitol
North Carolina (Raleigh)
Dept. of Conservation and Development
or
Adj. Gen. J. Van B. Metts (Military or Civic Activities)
Oklahoma (Oklahoma City)
The Adjutant General
Rhode Island (Providence)
State Council of Defense
State House
South Carolina (Columbia)
State Council for National Defense
New State Office Bldg.
South Dakota (Pierre)
The Adjutant General
Tennessee (Nashville)
State Advisory Committee on Preparedness
408 New State Office Bldg.
Texas
Governor's National Defense Committee
Austin, Texas
National Defense Aviation Board for Texas
Dallas, Texas
Vermont (Rutland)
State Council of Defense
Post Office Box 191
Virginia (Richmond)
The Virginia Defense Council
Washington (Camp Murray)
Washington State Defense Council
Wisconsin (Kenosha)
Wisconsin Council of National Defense

[*From Business Week, December 21, 1940*]

(*Continued on page 6*)

Over 24 MILES of UNIVERSAL Cast Iron Pipe Used at Fort Bliss, for Defense Construction

Six foot lengths for easy handling — *Only a ratchet wrench needed to make a joint* — *Only two bolts to tighten. No caulking or pouring of lead*

Four, 6, 8, 10 and 12″ sizes of Universal Cast Iron Pipe are being installed at Fort Bliss, Texas for the water supply system of this large Army Base. Because it requires only a Ratchet Wrench to install it quickly with unskilled labor, its speed factor in installation is apparent. With the speed required in defense construction, Universal Cast Iron Pipe is the logical choice for Army barracks and defense construction. NO POURING OR CAULKING OF LEAD IS REQUIRED TO MAKE A JOINT.

Each joint is tight because the ends are machined to form a bottle tight joint which is as tight as the pipe itself,—then too it is very flexible. Many curves are laid with straight lengths—easy to handle 6′ lengths. It withstands vibration and shock, electrolysis, contraction and expansion and unequal settlement; can be laid under water, on rocky terrain or in a sandy trench, in sub-zero weather or in the tropics.

Specify and use UNIVERSAL CAST IRON PIPE on your water supply systems, sewage disposal systems and high pressure fire lines. A large stock of pipe and fittings is carried for prompt shipment.

WRITE NOW to our Sales Department for information and a Universal Cast Iron Pipe Engineer will be glad to help you in solving your pipe installations. You will be surprised at the reduction of installation costs which he will be able to show to you.

Dept. C

THE CENTRAL FOUNDRY CO.
386 Fourth Ave., New York, N. Y.
Gentlemen: Send me the Universal Catalog.

Name _____

Street _____

City _____ *State* _____

THE CENTRAL FOUNDRY CO.
386 FOURTH AVENUE . NEW YORK, N. Y.

(*Continued from page 4*)

Two letters from London written to R. C. Bardwell, A. W. W. A. member of Richmond, Va.:

THE CHIEF CHEMIST
LONDON & NORTH EASTERN RAILWAY
STRATFORD, LONDON E. 15
8th October, 1940

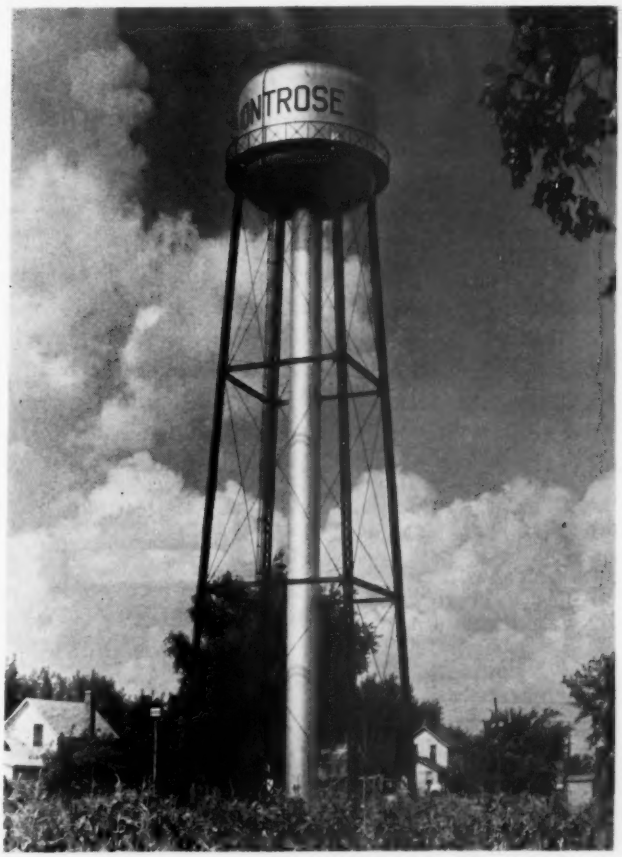
Dear Mr. Bardwell:

I have a note from Mr. Stevens, General Manager of Alfloc, Ltd., that his Railway Sales Manager, Mr. Pinchin, has recently met you, and that you have kindly enquired about my well-being. Let me assure you then at the outset, at the time of writing I am quite well, as is my family, which includes besides my wife, three sons. The eldest of my boys, who is 21, is in the R.A.F. training for pilot duties, and my second boy, who is 19, is expecting a call up to the R.A.F. any day now. You will notice I say "at the time of writing" for it has reached the stage when we in the London Area are living from day to day, endeavouring as best we can to carry on. The

(*Continued on page 8*)

Standard for Main Lines for Nearly 50 Years

THE VENTURI* METER
*VENTURI is the registered trade mark under which these famous main line meters are manufactured and sold . . . by
BUILDERS IRON FOUNDRY • PROVIDENCE RHODE ISLAND
WRITE FOR BULLETIN 293



A MODERN ELEVATED TANK

The ellipsoidal-bottom elevated tank design is modern, even though it has been in use for many years. The design was developed for the important functional purpose of keeping the "range in head" of the tank low. A low range in head gives better service throughout the distribution system as pressures in the water mains can only vary slightly.

The ellipsoidal roof enhances the appearance of this design, but it also has a definite functional purpose. The lower portion of the roof is used for storage space, thus reducing the height of the shell and eliminating a great amount of the dead air space found under the usual type of cone roof. For prices or further information on modern elevated water tanks of standard or special design, write or call our nearest office.

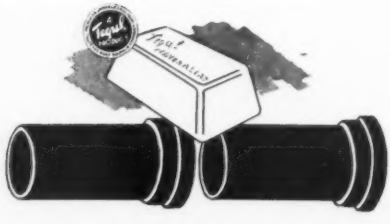
CHICAGO BRIDGE & IRON COMPANY

Birmingham, Ala. Boston, Mass. Chicago, Ill. Cleveland, O. Dallas, Tex. Detroit, Mich. Houston, Tex. Los Angeles, Cal. New York, N. Y. Philadelphia, Pa. San Francisco, Cal. Tulsa, Okla.

(*Continued from page 6*)

hope I expressed in my last letter that sufficient sanity might remain to avoid indiscriminate bombing of civilians has not been realised so far as Nazis are concerned, and we are now in the fifth week of regular night attacks on London and its suburbs. The frequent daylight raids are, of course, less fearsome but of necessity cause interruptions in normal routine. Anyway while the face of London may be scarred, the outline as a whole remains, as do the main roads and railroads and Hitler's effort against the heart of the British Empire has, so far, failed. The spirit of the people is indeed wonderful even of those who through bombing have lost their all, and the one idea is to stick it until we are strong enough in the air to give back all and more than we have taken and have yet to come. The magnificent work of the R.A.F. and R.N. have apparently upset the enemy's invasion plans, and time has been gained for the fuller training and re-equipment of the Army after the collapse of France. It was great to hear of the co-operation of the U. S. A. and British Governments resulting in the deal concerning naval bases and destroyers. This seems some evidence of a line-up which may come sooner or later, of

(*Continued on page 10*)



Jointing Costs More Than DOLLARS

Delays in laying—traffic risks maintained—hold-ups when compound gets wet—chemical changes in compound, entailing trouble—any or all of these may boost your expected cost • Avoid them by using Tegul-MINERALEAD • Initial leakage heals in a fraction of usual time; back-filling can proceed at once. You can stack *Tegul*-MINERALEAD outdoors, and downpours and floods won't cause you a moment's worry • Coming in ingots, this compound can't change composition • Its initial cost too, will be a pleasant surprise • More information on request. THE ATLAS MINERAL PRODUCTS COMPANY of Pennsylvania, Mertztown, Pennsylvania.

Tegul MINERALEAD

for JOINTING, BELL AND SPIGOT MAIN

EDSON

DIAPHRAGM PUMPS

Hand Operated—size 2″, 2½″, 3″, 4″
Power Operated—size 3″ and 4″
Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

Complete Pump Outfits, Genuine Edson Pumps, Suction Hose, Brass Couplings, Bronze Clamps, Red Seal Diaphragms, Brass Strainer or Foot Valve, Hose Spanners, Adapters, Etc. Brass Hydrant Pump.

THE EDSON CORPORATION
Main Office and Works: 49 D St., South Boston, Mass.
New York: 142 Ashland Pl., Brooklyn

AVALON, N. J., HURDLES THREE TOUGH OBSTACLES AT ONCE WITH K&M *"Century"* ASBESTOS-CEMENT PIPE

1 Unloading 12" Class 150 "Century" Pipe at the seashore resort of Avalon. No winches needed to handle this large pipe. Light weight and handling ease cut laying cost.

IN extending its water system, Avalon, N. J., faced three problems. Salt water seepage from the ocean made corrosion-proof pipe essential. Soft shifting sand made trenching and pipe-laying difficult. And a limited budget dictated rigid economy.

Keasbey & Mattison "Century" Asbestos-Cement Pipe solved all problems. It is corrosion-proof. Its "Century" Flexible Couplings permitted joining the sections quickly without shoring the trenches. Its low first cost met the strictest budget requirements.

In addition, "Century's" ease of handling and quick assembly helped speed the job to completion four and one-half months ahead of schedule! Write Keasbey & Mattison, asbestos specialists since 1873, for free catalogue, "Mains Without Maintenance." Address Dept. 1017.

2 In this soft sand, trenches readily collapse, and a joint that can be quickly assembled and is immediately water-tight is essential. The "Century" Flexible Coupling met these requirements.

3 Mr. W. C. H. Joiner, Commissioner of Public Works, who says—"In 'Century' Pipe we got a product low in first cost, low in maintenance cost, and permanently corrosion-proof."

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

K&M best in asbestos

(*Continued from page 8*)

the two great Democracies, against the axis power for evil, which were two, and are now three. . . .

I have very little news to offer of our W. T. activities. So far our 40 L/S plants have continued working with minor interruptions only chiefly in the London Area, due to the low pressure difficulties arising from fire fighting requirements or to burst mains. No plant has yet been hit, although we have some right on the Coast. Fortunately all our chemicals (except Tannin) are home produced, and there has been no difficulty on this account. We cannot hope for much progress with our development schemes under war conditions, but even so it seems probable that we shall be allowed to install plants at two important depots, viz., March (where there is a big marshalling yard) and Cambridge.

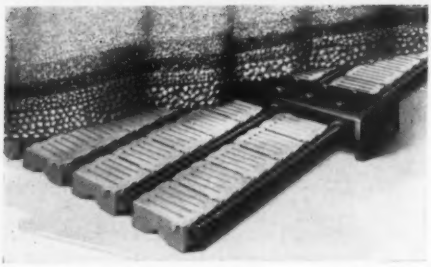
[There followed a lengthy discussion of various water treatment developments.]

My very kind regards,

Yours sincerely,
(Signed) F. GREEN,
Senior Chemist.

(*Continued on page 12*)

PERFECT WASH WATER DISTRIBUTION WITH WAGNER UNDERDRAINS



The patented design of concrete Wagner underdrain blocks assures perfect wash water distribution and equally efficient collection of filtered water.

Wash water discharges from protected orifices and its pressure is instantly dissipated against the filter floor. Any differences in pressure are immediately averaged. Thus, a uniformly gentle upward flow washes filters clean without carrying away sand.

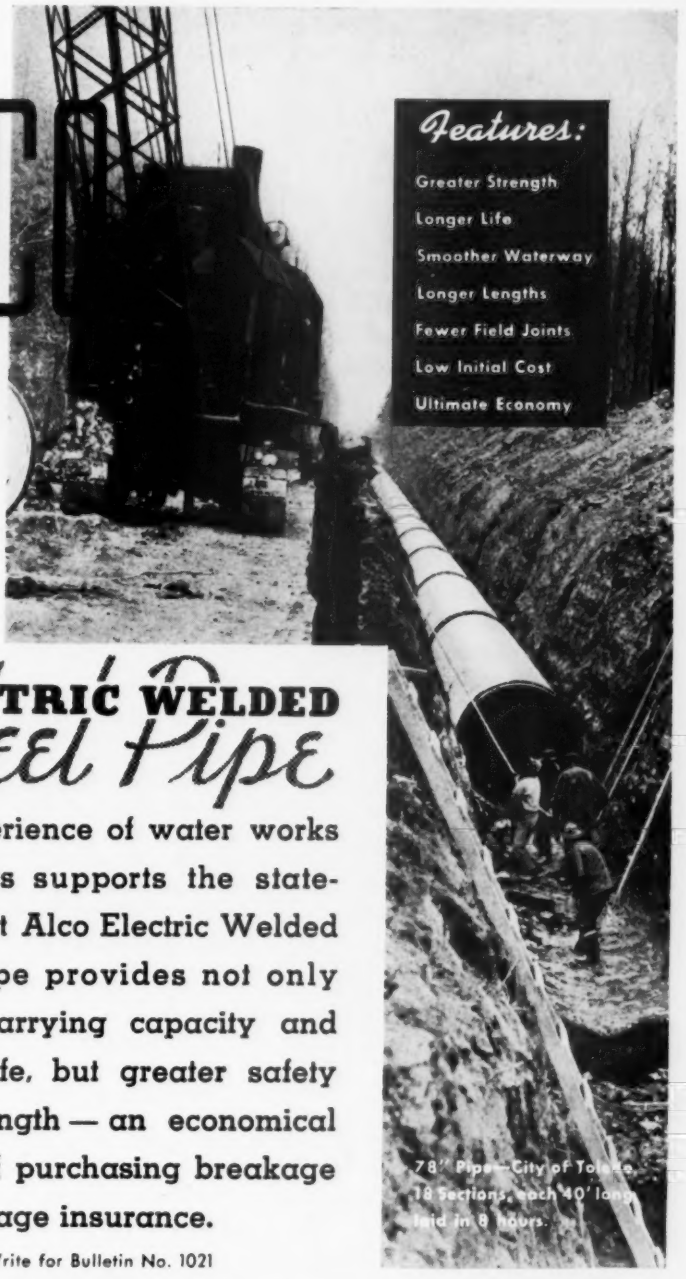
Gravity filters equipped with Wagner underdrains have been tested by the nation's leading engineers and have been found to be more efficient than conventional types of filters.

Write for Bulletin 901-A for complete details.

INTERNATIONAL FILTER CO. 325 W. 25th Place Chicago, Ill.

INFILCO

ALCO



ELECTRIC WELDED
Steel Pipe

The experience of water works engineers supports the statement that Alco Electric Welded Steel Pipe provides not only higher carrying capacity and longer life, but greater safety and strength — an economical means of purchasing breakage and leakage insurance.

Write for Bulletin No. 1021

AMERICAN LOCOMOTIVE COMPANY
ALCO PRODUCTS DIVISION
30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

(*Continued from page 10*)

THE CHIEF CHEMIST
LONDON & NORTH EASTERN RAILWAY
43 BRIDGE TERRACE
DONCASTER

November 4, 1940.

Dear Mr. Bardwell:

Mr. Fred Green has been in communication with you for upwards of six years and last wrote to you less than a month ago. Presumably you will have his letter by now.

I am sorry to say that exactly a week after he wrote to you, his house was hit by a bomb at 9 o'clock in the evening, when he was playing chess with one of his younger sons.

The eldest of his three sons had, just shortly before, taken his first solo flight in the Royal Air Force and was away from home on service.

You will be sorry to hear, however, that Mr. and Mrs. Green, and the two remaining sons, were all killed instantaneously.

The Water Treatment Section work will have to carry on, but we shall miss Mr. Green's chemical knowledge, which was associated with a very wide practical experience of railway working.

A day or two ago I sat in his office chair while interviewing the staff of the Stratford laboratory and none of them wished to be evacuated to safer places. One cannot help admiring the determination of the Londoners.

Mr. Green wrote to you with my knowledge and encouragement and I hope that we shall be able to keep in touch by an exchange of letters from time to time.

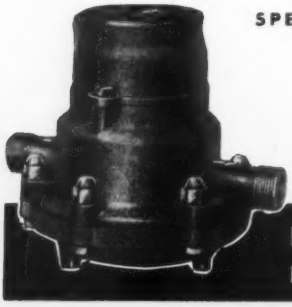
With kind regards,

Yours sincerely,
(Signed) T. HENRY TURNER,
Chief Chemist.

Mr. Green had been an Active Member of the A. W. W. A. since 1933.

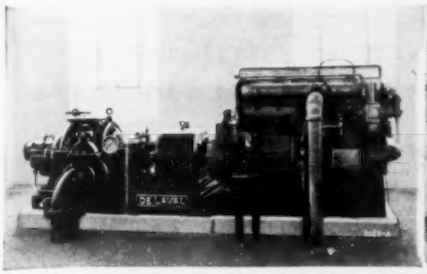
(*Continued on page 14*)

FIRST QUALITY METERS EXCLUSIVELY

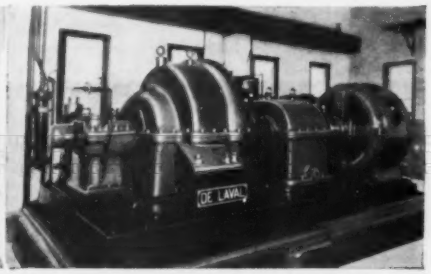


SPECIFY *American* or *Niagara*
(BRONZE CASE) (IRON CASE)
Water Meters
WRITE FOR CATALOG

BUFFALO METER COMPANY
Established 1892 2914 Main St., Buffalo, N. Y.



Centrifugal compressor in activated sludge service, driven through speed increasing gear by gas engine; 3000 cu. ft. per min. against 8 psi. at 6000 r.p.m. The engine speed is 1200 r.p.m.



Two-stage compressor in activated sludge sewage disposal plant; 13,500 cu. ft. per min. against 6 psi. at 3600 r.p.m. compressor speed and 1200 r.p.m. motor speed.

SLOW speed motors joined by DE LAVAL GEARS to HIGH speed pumps and blowers

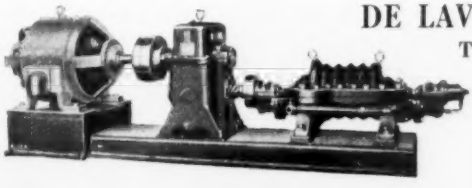
ALTERNATING current motor speeds are limited by the frequency and D.C. motor speeds by commutation difficulties, while internal combustion engines are of comparatively slow speed. **However, choice of speed has important effects upon the design of pumps and compressors.**

If high pressure is generated at slow speed, too many stages and too long shafts are required, while splitting the unit into two parts increases cost and space requirements excessively. A high speed pump, on the other hand, has smaller impellers and a smaller casing and, consequently, lower casing stresses. The shorter shaft can be of smaller diameter, resulting in lesser leakage losses and in lower linear vane speed at the entrance to the first stage impeller, so that cavitation can be avoided without excessive positive head on the suction.

Such problems are neatly solved by DE LAVAL HELICAL GEARS, which make possible the use of standard speed motors with efficient, compact and reliable pumps and blowers.

The De Laval Engineering Department will gladly supply technical data for solving your individual problem. For information on:

Helical Gears, write for Catalog G-3211;
Multistage Pumps, write for Catalog P-3211;
Centrifugal Blowers and Compressors, write for Catalog F-3211.



Six-stage boiler feed pump driven at 4000 r.p.m. through helical gear from 1800 r.p.m. motor; 125 g.p.m. of 218° F. water against 525 psi.

DE LAVAL STEAM TURBINE CO.
TRENTON, NEW JERSEY

(*Continued from page 12*)

New Materials and Gadgets

1. Unit blueprint cabinets for filing drawings, tracings, maps, prints, etc., are now available in the depth of 16¼ in. They are mounted on rollers and are made with three or five drawers in the following dimensions: 48 x 36 in., 42 x 30 in., 36 x 24 in., or 24 x 18 in. Partitions can be obtained to permit filing smaller papers.

2. A steel pipe scaffold has been designed with sleeve assembly, that is with each member made to fit over the adjoining members. The post is a piece of pipe with a projection at one end, made by inserting and welding in place a smaller pipe. The braces connecting the post from the outside of the structure have a short piece of pipe, to fit over the small pipe of the vertical post, welded at right angles across each end.

3. A new safety belt tail line, designed to give greater freedom of action to the worker, is now on the market. The line is an aircraft type cable, tested to 3,900 lb.

4. A new gun for metallizing in maintenance, salvaging, and manufacture of equipment needing such coatings, is now available. Designed to use any gas, the gun has self-aligning bearings and has an added number of air flutes to give finer atomization.

5. By means of a portable, rotary oil retort, heating oils, asphalts, etc., in tank cars can now be accomplished at an hourly temperature increase of 60° F. for 10,000 gal. of oil. Rotating coils in the retort are designed to obtain uniformly progressive heating, thus avoiding hot zones and the danger of forming carbon or cracking the oil.

6. For laying small pipes where working room is limited, a new trencher is on the market. It is 45 in. wide overall and weighs only 7,000 lb. It is designed for digging trenches 8 to 12 in. wide and as deep as 3½ ft.

7. Pneumatic wrenches in the new sizes of ⅜ in., ⅝ in. and ¾ in. are now available with vane-type reversible motors. Features are: no gears, springless driving units, tapered nose ends and slow speed rotary motors.

Readers can obtain further information by sending a postal to the A. W. W. A. headquarters giving the reference numbers of any of the above items and citing the January issue as the source.

(*Continued on page 16*)

Another Reason for Rensselaer Quality

Making a Tensile test and at the same time determining the yield point of metal, by using an Extensometer on a Riehle Testing Machine.

Tests are made daily to maintain "quality" of highest standards.

Buy RENSSELAER for QUALITY

RENSSELAER VALVE CO.

TROY, N. Y.

(*Continued from page 14*)

Rochester, N. Y., is these days much in the public eye as a result of a major misadventure in its water works operations. For many years that city has had its regular public supply system and a separate high-pressure fire system. For a considerable length of time it has been understood that there were no connections between the mains of the two systems. It was presumed that certain cross-over valves, installed in the early days, had been removed. Both systems are under pressure constantly.

A water department maintenance crew was called upon to repair a valve in one of the city's streets. When the job was done, the valve was left in the "open" position. Then the engineer at the high-pressure pumping station noted that the pressure on his system was dropping. So he speeded up his pumps and forced water from the polluted, flooded Genesee River into the fire system. After numerous complaints had been received from users of the regular city supply, the (unknown cross-over) valve was closed. But it had been open and the fire pumps had been operating all night. The State Board of Health Engineers ordered immediate chlorination of the regular city water distribution system and made anti-typhoid vaccine available to the public. More than 5,000 citizens took advantage

(*Continued on page 18*)

DIFCO

Culture Media Ingredients

This group of Difco Products is prepared expressly for use as ingredients of bacteriological culture media. Each product is carefully tested and standardized to meet the most rigid requirements of usefulness for the purposes for which it is to be employed.

Bacto-Beef Extract, approved in "Standard Methods of Water Analysis."

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Bacto-Oxgall, especially recommended for preparation of bile media.

Bacto-Lactose, a highly purified product recommended for use in many media for presumptive detection of coliform bacteria.

Certified Dyes, for use in culture media, include Bacto-Basic Fuchsin (DF-5), Bacto-Brilliant Green (DBg-1), Bacto-Crystal Violet (DC-1), Bacto-Eosin Y (DE-3) and Bacto-Methylene Blue (DA-4).

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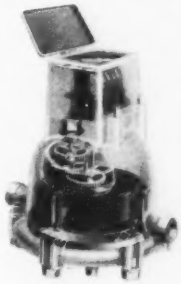

The flow of liquid through the Empire Meter is continuous and in one direction, through parts which are always fully open. The only moving part in the measuring chamber is the piston, which oscillates smoothly in a circular motion, with a minimum of friction and therefore with minimum wear.

The real cost of a water meter is a matter of first-cost *plus maintenance*. The cost of removing and replacing a dead or inaccurate meter (labor and transportation), plus repair costs (labor and parts), adds to the first cost of the meter from 25 to 50 per cent or more. That is why Empire Meters cost least in the long run. They stay accurate longer than ordinary meters . . . need less attention, fewer repairs. Finally, sustained accuracy not only cuts down operating costs . . . it also insures increased revenue.

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Empire METERS

(*Continued from page 16*)

of the immunization against typhoid. More than 1,000 cases of mild intestinal disorder were observed and all concerned dwell in the hope that typhoid infection was not carried by the Genesee water.

At this stage, it is not possible to draw a general series of conclusions concerning this potential disaster. Water Works engineers are keeping themselves as fully informed as possible and in due time a report upon the subject will be made. But no one, even today, would be willing to say that such a thing should have occurred.

Long* versus *Short Body Fittings for Water Supply, a bulletin in two parts, can be obtained from Cornell University at no charge, under a new policy of the Cornell Engineering Experiment Station which now makes single copies of bulletins available to engineers without charge.

The bulletin on body fittings is No. 20 and was published in September, 1935. Part I by Ernest W. Schoder and Arthur N. Vanderlip is called "Loss of Head Caused by Bends, Tees, and Crosses" and describes experiments on A. W. W. A. standard and proposed short body types, made at Cornell University in 1929–30. Part II by Allen T. Ricketts and Thomas H. Wiggin is called "Economic Comparison" and considers operating cost, as affected by friction, and installation cost.

(*Continued on page 20*)

Tentative Standard Specifications for Elevated Steel Water Tanks, Standpipes and Reservoirs

Another document for the betterment of water works practice. Produced jointly by the American Water Works Association and the American Welding Society.

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American Water Works Association
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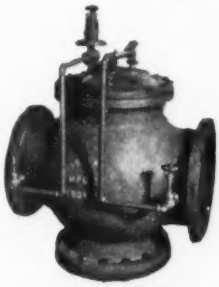
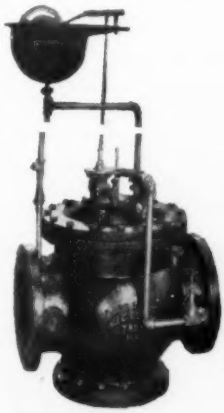


Maintains desired discharge pressure regardless of change in rate of flow

REDUCING VALVE

Regulates pressures in gravity and pump systems; between reservoirs and zones of different pressures, etc.



Maintains levels in tank, reservoir or basin

1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

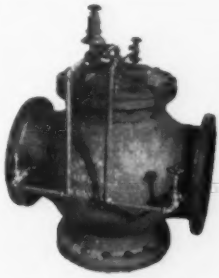
FLOAT VALVE

A self contained unit, with three or more automatic controls

COMBINATION VALVE

Combination automatic control both directions through the valve

Maintains safe operating pressures for conduits, distribution and pump discharge



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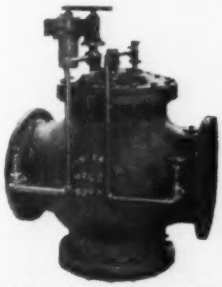
Electric remote control—solenoid or motor can be furnished



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(*Continued from page 18*)

To obtain this bulletin (No. 20) free of charge write Raymond F. Howes, Assistant to the Dean, College of Engineering, Cornell University, Ithaca, N. Y.

The Ninth Annual Georgia Water and Sewage School was held in Atlanta October 16, 17, 18 and 19. The total attendance of 343, exceeding that of any previous year, was composed of 307 superintendents, operators, municipal and other public and industrial officials and 36 manufacturers' representatives. The large registration evidenced the important place that the School occupies in the Georgia plan of providing the instructive stimulus for efficient operation of water and sewage plants and swimming pools. The School also permitted representatives of communities not yet adequately provided with modern facilities to gain practical ideas for planning local water and sewerage programs.

The School was held in the classrooms of the Georgia School of Technology. Instruction was conducted by the lecture-demonstration method to which were added informal discussion and plant inspections.

Sewage plant operation and swimming pool maintenance were given

(*Continued on page 22*)

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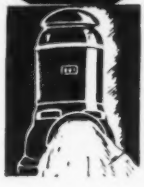

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ARMCO Spiral Welded Pipe

STEEL PIPE . . . AN OLD PRODUCT MADE BETTER

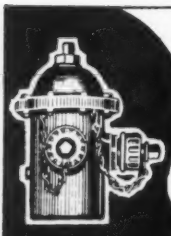
(*Continued from page 20*)

increased emphasis in the instruction schedule. The similarity of principles involved made it possible to combine discussion of these with water purification subjects thus effecting a considerable saving of time and eliminating duplication in teaching effort. A special class was conducted for those attending for the first time. During this separate session principles basic to both water purification and sewage treatment were explained. This procedure enabled the men in this group to adjust themselves more readily to the subjects under study by the advanced group.

One day was spent in visiting cities in the northwest portion of Georgia. A motorcade of over sixty automobiles transported those attending the School to Marietta, Rome, Berry School, and Cedartown for inspection of interesting plants on a one hundred fifty mile trip, returning in the evening to Atlanta.

Through authorization of the Fourth Corps Area Engineer Office one of the new portable field water purification units was sent from the 4th Engineer Regiment at Fort Benning for demonstration. The unit consisting of intake pump, coagulant and chlorine feeders, pressure filter, and canvas reservoir is capable of clarifying and sterilizing fifteen gallons per

(*Continued on page 26*)



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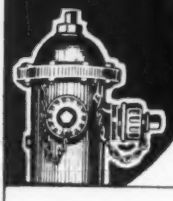

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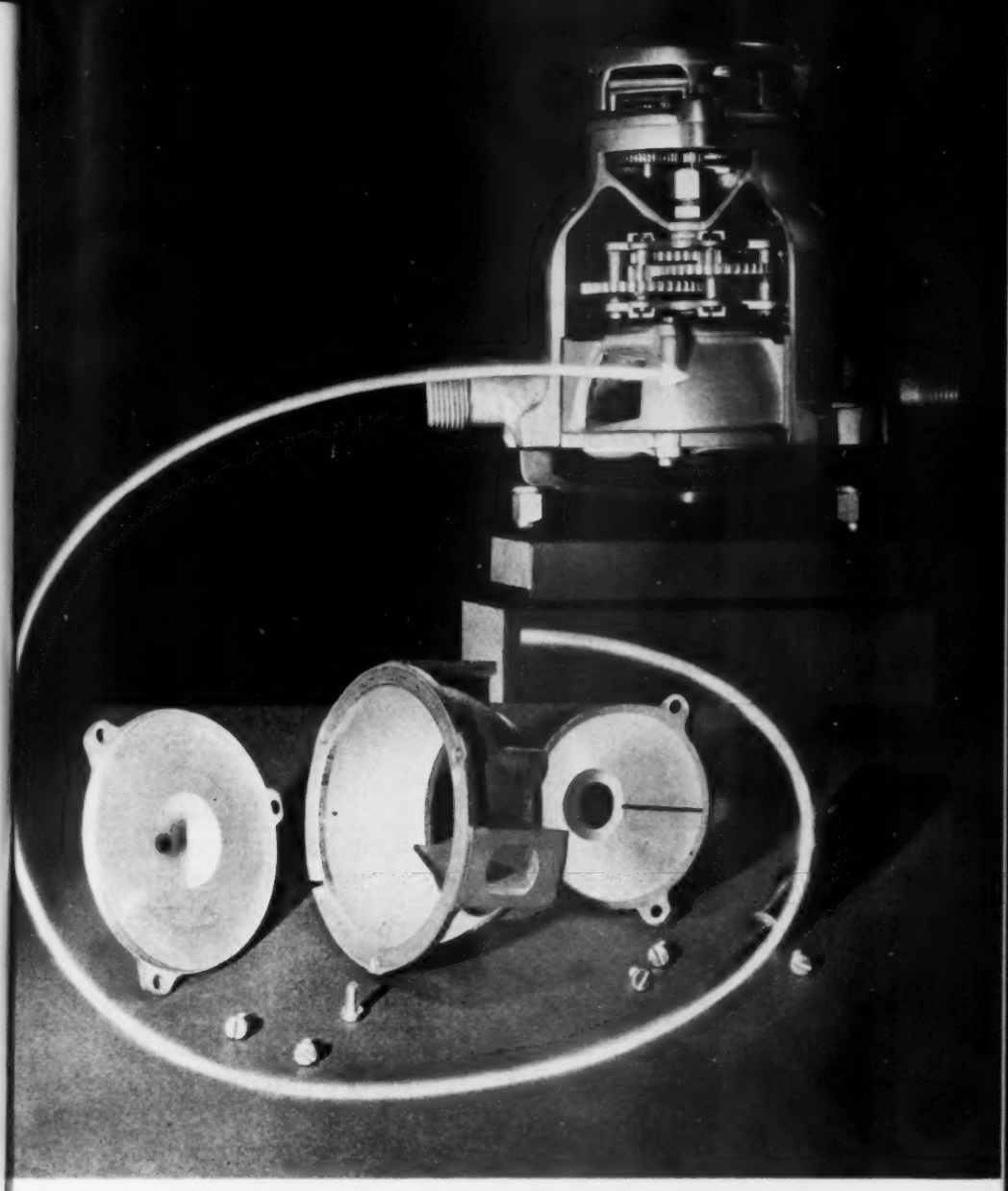

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(*Continued from page 22*)

minute. This type of unit is used for a field water distributing point for a regiment or similar body of troops, and being in several parts of light weight is capable of rapid movement and quick assembly.

Written examinations were conducted for Class A, B and C Water Certificates and Class C Sewage Certificates. The number of candidates taking examinations in the several classifications were as follows: Class A Water, 3; Class B Water, 10; Class C Water, 22; and Class C Sewage, 22. Examinations for sewage plant operator certification were held for the first time this year. Certification of water plant operators has been in effect for several years and the extension of this program into the sewage field is a logical step in directing public attention and appreciation to the operation of sewage plants. Examinations for Class B Sewage Certificates will be held next year and in ensuing years in all classifications including Class A.

Officers elected by the Georgia Water and Sewage Association were: George H. Sparks, East Point, President; H. E. Whelchel, College Park, 1st Vice-President; W. H. Weaver, Decatur, 2nd Vice-President, and Paul Weir, Atlanta, Secretary-Treasurer. Directors elected on the Board of

(*Continued on page 28*)

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(*Continued from page 26*)

the Federation of Sewage Works Associations were Porter Enloe and G. R. Frith of Atlanta.

Outline of Research Facilities and Bibliography of Research Reports is a booklet just published and available in limited numbers upon request made to the American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York, N. Y. Also reprints of many of the research reports listed in the bibliography are available for distribution at a nominal cost of 10 or 15 cents each.

The 1941 meeting of the Midwest Power Conference will be held on April 9 and 10, at the Palmer House, Chicago. This conference is sponsored annually by Illinois Institute of Technology (formerly Armour Institute of Technology) with the cooperation of seven other midwestern universities and colleges and the local sections of the founder and other engineering societies. The conference is entering its fourth year under the present sponsorship.

"The purpose of the Midwest Power Conference," according to Professor Stanton E. Winston, Conference Director and Associate Professor

(*Continued on page 30*)

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(*Continued from page 28*)

of Mechanical Engineering at Illinois Institute of Technology, "has been established as that of offering an opportunity for all persons interested in power production, transmission, or consumption to meet together annually for the study of mutual problems, free from the restrictions of required memberships in technical or social organizations. It is felt that academic sponsorship of a conference permits the freest possible discussion ranging from the technical through the economic and into the social aspects of the subject."

The tentative program of the 1941 meeting, as outlined by the directorate of the Conference, includes sessions on Central Station Practice, Stationary Prime Movers and Plant Auxiliaries, Hydro Power, Electric Power Transmission and Distribution, Feedwater Treatment, and Industrial Power Plants.

Inquiries in regard to the conference may be addressed to either Stanton E. Winston, Conference Director, or Charles N. Nash, Conference Secretary, in care of Illinois Institute of Technology, 3300 Federal Street, Chicago, Illinois. It will be remembered that Armour Institute of Technology and Lewis Institute were recently merged to form what is now known as Illinois Institute of Technology.

(*Continued from page viii*)

PRESTON, A. W. Supt., Engr. & Mgr., City Water Dept., Monterey Park, Calif.
SCHWARTZ, WM. H. Supt., City Water Dept., Sierra Madre, Calif.
SETZER, AUBREY JAMES. Supt. of Water & Sewer Plants, High Point, N. C.
SKIDMORE, C. E. Supt., Water Dept., 1752—10th St., Reedley, Calif.
SMITH, D. T. Supt., Water Dept., Washington, N. C.
SMITH, OZRO J. Stationary Steam Engineman, Bureau of Water Works & Supply of Los Angeles, Box 166, Burbank, Calif.
THOMAS, EDWIN S. Attorney, Long Beach Water Dept., 409 Municipal Utilities Bldg., Long Beach, Calif.
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MINEOLA, INC. VILLAGE OF, WATER DEPT., Christian E. Dick, Chairman of Water Com., 217 Horton Highway, Mineola, N. Y.

(*Continued on page 32*)

News of the Field

The American people are passing through a most extraordinary type of mass thinking. Those who lived through the experiences of 1916–1917 or those whose memory goes back to 1898, will remember the surge of emotion that swept young men into the military forces and the older men into the "four-minute" group and the buying of Liberty Bonds. The current attitude is a curious complex of intellect and emotion that is finding outlet in organizing for civil defense. That of course is based upon the picture of things as they appear to be in England as well as parts of Europe today. It seems that the war in the west of Europe is not between the soldiers or the sailors of the nations in conflict, but a war of the respective air forces against the defense production industries and the civilian populations under enemy control.

So Americans are thinking of civil defense, of sabotage, of air raid shelters, of emergency food supplies and the like. And each man seems to be saying to his neighbor—let's organize a defense committee. Now, mind you, if things go on as they appear to be going, every American must put his shoulder to the wheel—of the armed forces or industry or of civil life geared to fit the scene of war. And the participation of a nation in war, as well as many other things, does not proceed in a vacuum but requires the spiritual as well as the material cooperation of the citizens. So organization for civil defense is necessary. This Journal has suggested that the participation of water works men in defense activities be primarily based upon the *fact* that every civil defense activity when translated into the water department simply means good management. Extension and improvement of physical plant, as well as improvement in personnel relationships and performance, are at the same time good management and civil defense.

But shall this Association set up a committee on defense control of water systems and encourage its Sections to do likewise? Some persons have indicated that they felt that such an organization of water works men on a general as well as sectional basis should be established. Others point out that water works men are an essential part of the public service group in any community or state and that they should join in the civil defense work led by their State Defense Councils. Since in any single city there is only one group of water works men, the perfecting of their own operating practices is all that they can do to protect the water supply against emergency or disaster. But if they take counsel with the key men in their

(Continued on page 2)

(*Continued from page 1*)

electric, gas and other local utility and service groups and integrate their local activities with the state leadership, they are more likely to do an effective defense job than would be the case if they set up a special inter-city or intra-state group of water works men. This much is certain—state defense councils have been established in three-fourths of the states and a national clearing house for their work is functioning in Washington. These councils work within the framework of regularly constituted state authority and appear to offer the most practical path for effective action.

This must be kept in mind—civilian defense in time of emergency is not a thing that someone else is going to perform for a city or state. It is a thing which a city or its good neighbors must do for itself for the very simple reason that too many people are involved for it to be handled in any other fashion. And in organizing for defense, the sensible policy appears not to be the establishment of an infinite number of nationally directed defense organizations, but the integration of defense along the traditional and natural paths of American policy. Special information related to specific fields, such as water supply, already has been made

(*Continued on page 4*)

John B. Hawley, Hydraulic and Sanitary Consulting Engineer of Fort Worth, Texas, died on January 9 at the age of 74.

Mr. Hawley was born in Red Wing, Minn., and was graduated in 1887 from the University of Minnesota. His first position after graduation was as an engineer for the St. Paul water board. He then moved to Fort Worth where he engaged in private practice for seven years before serving as City Engineer of Fort Worth from 1897 to 1907. After a return to private practice, he was President of the General Construction Company and was a Consulting Engineer from 1909 to 1917.

During the World War he was a Major of Engineers, commanding the 503d Engineers of the A.E.F. with headquarters at St. Nazaire, France. He was also Engineer in charge of water supply and sanitation of Base Section No. 1 on the Western Front.

After the War he returned to Fort Worth to private practice, both in partnership with other engineers and independently.

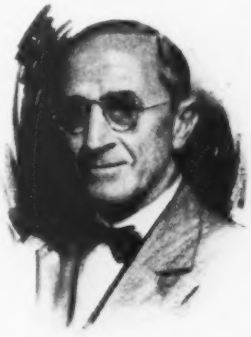
Major Hawley served as a member of the Advisory Council of Engineers to the Governor of Texas in 1922–24 and as a member of the Engineering Board of Review of the Sanitation District of Chicago in 1924–25. He joined the Engineering Advisory Board of Texas Christian University in 1924 and was an Associate in biological research there from 1926 to 1929.

He had been an Active Member of the A.W.W.A. since 1923.

ERNEST L. H. MEYER

Supt. of Water Department, GLENS FALLS, NEW YORK

writes:



We have 9 1/2 miles of cast iron supply mains furnishing water from our intake reservoirs about 4 miles away. These range from 12″ to 24″ in diameter, and although our records are not clear, were doubtless installed 40 to 50 years ago. I have been Superintendent of our Water Department for 22 years and I can safely say that during this time the maintenance cost of these pipe lines (other than two breaks due to improper laying) has been under $1.00 per mile per year.

LOW MAINTENANCE is an economy factor in cast iron pipe that is usual, rather than exceptional, in water works experience. An impartial survey among nearly 200 water works superintendents shows that the maintenance cost of cast iron pipe is far below that of any other pipe material which has been in use long enough for the recording of conclusive data.

Look for the "Q-Check" Registered trade mark.
Cast iron pipe is made in diameters from 1 1/4 to 84 inches.
The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois

CAST IRON PIPE
PUBLIC TAX SAVER NO. 1

(*Continued from page 2*)

available. This Journal can continue to make available any material which appears to be informative and helpful to water works men in meeting their peculiar problems. And in the meantime, water works men can properly join in the local and state defense groups that are bringing together leaders for joint action in the solution of their common and community problems.

Prof. Earle L. Waterman and three of his former students were around the table when the Board of Directors of the A. W. W. A. met in New York on January 13–14.

From the New Jersey Section came Director S. F. Newkirk, Jr., Engineer and Superintendent at Elizabeth, N. J., who studied under Prof. Waterman at Pennsylvania State College. Two former students under Prof. Waterman at the University of Iowa are E. E. Jacobson and John B. Harrington. Mr. Jacobson is Director from the Kentucky-Tennessee Section and Manager of the Lexington, Ky., Water Co., and Mr. Harrington is Director from the West Virginia Section and Director of the Division of Sanitary Engineering of the West Virginia State Department of Health.

Another former student of Prof. Waterman, Howard D. Schmidt,

(*Continued on page 6*)

Robert C. Terrell, City Engineer and Superintendent of Water Works, Danville, Ky., died at the age of 56 on January 9 in Danville.

Mr. Terrell was born in Bedford, Ky., in 1884. He was graduated from the University of Kentucky Engineering College and after receiving a master's degree in engineering in 1908 he organized the School of Highway Engineering and was an Associate Professor of Civil Engineering from 1908 to 1912.

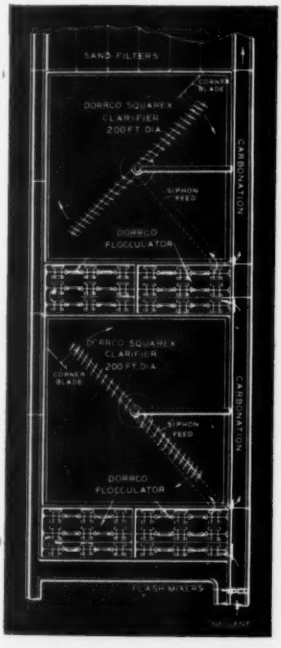
In 1912 he organized the Highway Department of Kentucky and was appointed Commissioner of Public Roads and ex-officio Chief Engineer. From September, 1916, to February, 1920, he was an Associate Professor and Acting Director of the Civil Engineering School of the University of Oklahoma. During this time he obtained a leave of absence to become Oklahoma's State Highway Engineer.

In 1926 he entered private engineering practice with H. K. Bell as associate and did consulting engineering for cities in central Kentucky. From 1928 to 1929 he taught mathematics at Georgetown College. Between 1932 and 1935 he was Engineer for tests for the Kentucky Highway Department, making his home in Lexington.

He was an Active Member of the A.W.W.A.

BETTER WATER FOR LOS ANGELES

Fairchild Aerial Photo.



treated in DORRCO SQUAREX CLARIFIERS *and* FLOCCULATORS

Southern California is to have another large water plant next year—this time a 100 M.G.D. water softening plant for the Metropolitan District of Los Angeles. The site is in the background of the above aerial view, half way between the coast and the San Bernardino Mountains.

This modern plant will be fully mechanized and Dorr-equipped throughout. Two, three-row Dorrco Flocculators, each 200 ft. long. Two big Dorrco Squarex Clarifiers, each installed in a 200 ft. square tank. Two multiple impeller Dorrco Flash Mixers for the diffusion of chemical reagents.

The sketch of the mixing, flocculation and sedimentation layout shows an ideal, economical arrangement in a single, compact structure. Note the efficient use of common dividing walls. Note the transfer of flocculated water to the clarifier via a siphon, to prevent the destruction of floc structure while in transit.

Raw water will be drawn from the Colorado River to the plant site at San Dimas through a recently completed aqueduct 252 miles in length. The consulting engineers are Hoover & Montgomery of Columbus, Ohio.

"Sedimentation," a new 38 page treatise on Dorr Clarifiers, including the Squarex, will be sent post haste, on request.

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ATLANTA TORONTO CHICAGO DENVER LOS ANGELES

(*Continued from page 4*)

Sanitary Engineer of the State Department of Health of Tennessee, will succeed Mr. Jacobson as Director from the Kentucky-Tennessee Section at the close of the Toronto Convention.

A high point in Prof. Waterman's renewal of school associations was that with an old-time school fellow—R. K. Blanchard, Vice-President and Engineer of the Neptune Meter Co. and perennial Secretary of the New York Section. When Mr. Blanchard saw some years ago the name "Earle L. Waterman" listed in the JOURNAL as the Secretary of the Missouri Valley Section, he wondered if it could be—and writing Prof. Waterman—found it to be: they were fellow alumni of a Vermont kindergarten.

Edgar M. Johnson, who has been for the past three years Assistant Superintendent of the Raleigh, N. C., Water Dept., has been named Superintendent to succeed the late Ernest B. Bain who had held that position for the past 40 years. Mr. Bain had been a member of the A.W.W.A. since 1904.

Mr. Johnson, who has been a member of the A.W.W.A. since 1930,

(*Continued on page 8*)

Henry F. Juengst, retired engineer for the St. Joseph, Mo., Water Company, died at the age of 85 in St. Joseph on January 12, as a result of an attack of influenzal pneumonia.

Mr. Juengst, a native of Lingen, Germany, came to the United States at the age of 17 and settled in Cincinnati where he became associated with the water bureau. In 1880 the late James M. Burnes and Associates, original owners of the St. Joseph Water Company, invited Mr. Juengst to assist in building the first water plant there. In 1890 he was called upon to aid in the construction of many of the plants of the American Waterworks & Electric Company, playing a part in the building of water works in Birmingham, Ala.; Chattanooga, Tenn.; Little Rock, Ark.; New Castle and Pittsburgh, Pa.; and Joplin, Mo.

Returning to St. Joseph in 1920, Mr. Juengst became associated with the St. Joseph Water Company as Resident Engineer and Chemist. He retired in 1928 but remained a close adviser to the company until the time of his death. He was an Active Member of the A.W.W.A.

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Our specially designed fractionating column removes 95% of the residual impurities from Pennsylvania Salt Liquid Chlorine. There's no more hexachloroethane, hexachlorobenzene, acetylene tetrachloride—the taffy is gone. We've taken the "hex" out of your chlorination.

And this more highly refined chlorine comes to you in safe, clean containers, each fitted with a newly reconditioned and repacked valve, each check tested before and after loading, to insure delivery of this better chlorine to you in an extra safe, acceptable condition.

20 important suggestions helpful to you and your employees are contained in our safety wall placard "Handling Liquid Chlorine." Write today for a free copy to hang near your chlorinator.

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals

(*Continued from page 6*)

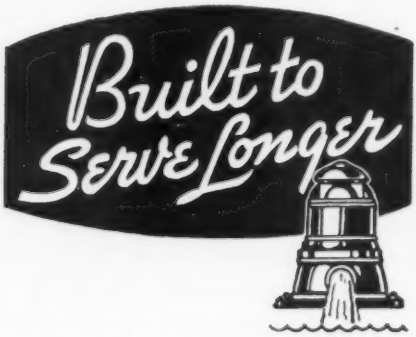
was formerly Superintendent of the Monroe, N. C., Water Dept. and from 1933 to 1937 was a W.P.A. Construction Engineer stationed at Raleigh.

At Elmira, N. Y., plans are progressing for laying a half mile of 10-inch cast-iron main in a suburban territory so that the line may be laid before the construction of a new State Highway. H. M. Beardsley is the General Manager for the Water Board at Elmira.

Walter H. Boquist of West New York, N. J., has been appointed Controller of the Hackensack Water Company succeeding the late William W. Schwartz of North Bergen. Mr. Schwartz served as Secretary-Treasurer of the A.W.W.A. Finance and Accounting Division during 1938–40.

Mr. Boquist, who has been Commercial Agent of the Company since 1931, began his career as a clerk in 1909. After serving with the Commercial Department in various capacities, he became District Supervisor of the Weehawken district in 1920, and eleven years later Commercial Agent of the Company. No announcement has been made as to Mr. Boquist's successor as Commercial Agent.

(*Continued on page 10*)



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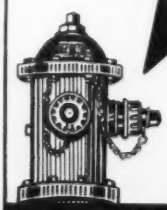

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KUPFERLE
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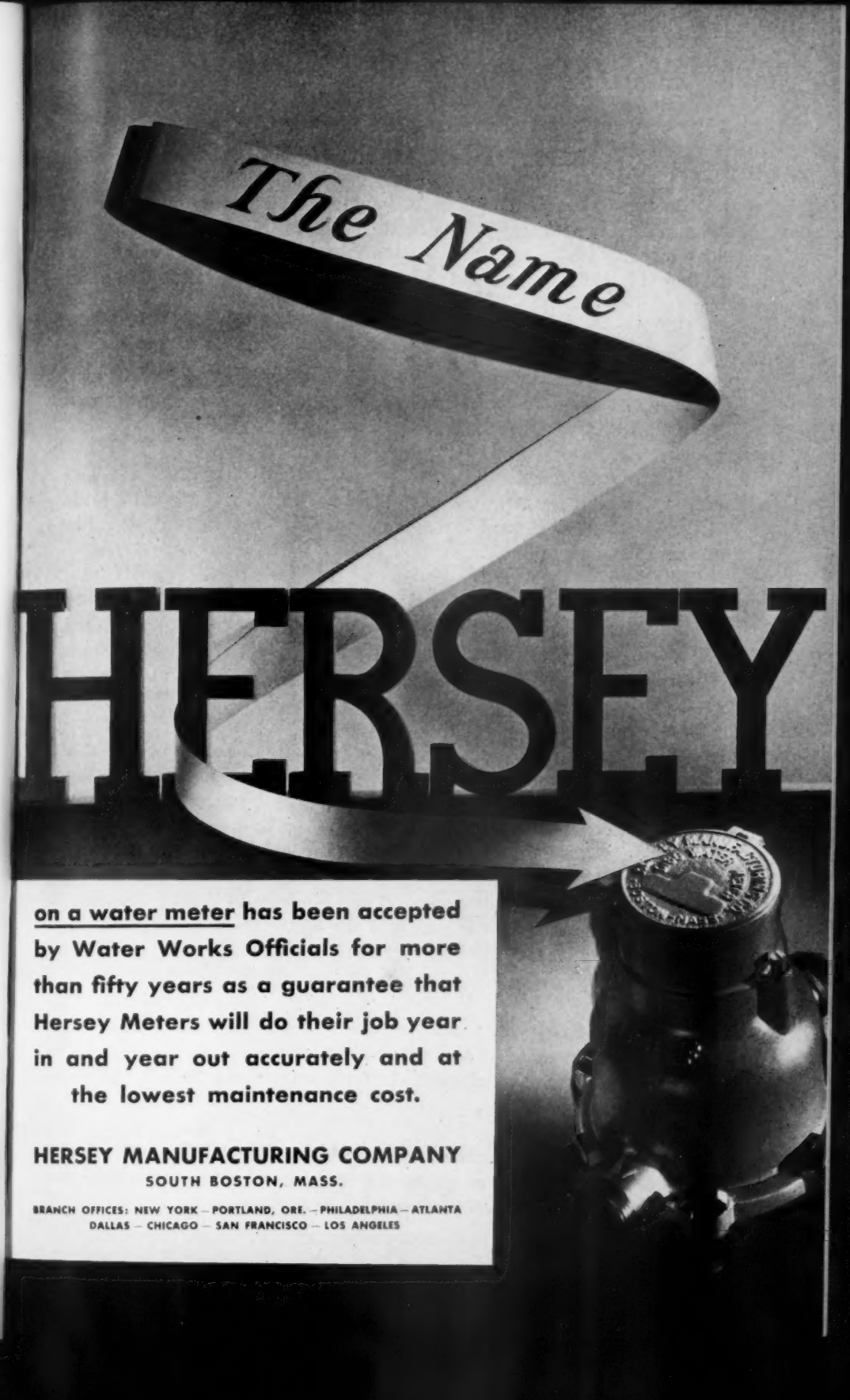
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on a water meter has been accepted by Water Works Officials for more than fifty years as a guarantee that Hersey Meters will do their job year in and year out accurately and at the lowest maintenance cost.
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(*Continued from page 8*)

New Materials and Gadgets

1. A transparent plastic pump for handling dilute acids, hypochlorite and many other chemicals is now on the market. Machined from a solid block of clear plastic material, the pump permits complete visibility of the flow of liquid being pumped and the movement of the valve checks and pump piston.

2. A motor-operated valve has been designed for automatic control of corrosive fluids, liquids containing solids, viscous and volatile substances, or gases. It has valve bodies available in various types of alloys, or cast iron lined with lead, rubber or glass.

3. High-speed induction motors for direct connection are now available with new design features for protection against flying dirt and liquids. Alternative provisions for cooling permit installation for operation under varying temperature conditions.

4. A new heating device is a portable steam radiator which operates on either alternating or direct current by merely plugging in an extension. The mechanism is described as combining in the one radiator both systems of heating: dry or super-heated steam and constant turbulent agitation.

5. A new complete set for making tests of hydrant flows, pressure and loss of head is now available and includes: a hand pitot and a combination hand and clamp pitot, both equipped with large air chambers and throttling cocks; three gages, and an adapter for a tapped hydrant cap.

6. Union seals for preventing the shifting of water meters are now made with duplicate or interchangeable parts so that any two pieces fit together to make a complete seal. The pieces are locked by inserting a locking key into the projecting ends of the seal. The seal is unlocked by striking the key a sharp blow which breaks it, a new key being inserted to re-seal the union.

7. New large capacity pumps for use in the lower head ranges have been designed so that the hydraulic stream flow through the impeller is at an angle to the axis of rotation, or center of the pump shaft. There are both vertical and horizontal types.

Readers can obtain further information by sending a postal to the A. W. W. A. headquarters giving the reference numbers of any of the above items and citing the February issue as the source.

(*Continued on page 12*)

Another Reason for Rensselaer Quality

A transverse and deflection test of a Cast Iron Bar on a Riehle Testing Machine.

Tests are made daily of all Iron and Bronze used in Rensselaer Valves, Hydrants and other Products, to maintain QUALITY of the highest standards.

Buy RENSSELAER for QUALITY

Make your plans to attend the 61st Annual Meeting of the American Water Works Association, Toronto, Ontario, Canada the week of June 22 to 26, 1941.

RENSSELAER VALVE CO.

TROY, N. Y.

(*Continued from page 10*)

John Van Nostrand Dorr, President of the Dorr Co., Inc., received on January 10 the thirty-fifth impression of the Perkin Medal which is awarded annually by the American Section of the Society of Chemical Industry for valuable work in applied chemistry. The award was made at a joint meeting with the American Chemical Society, American Institute of Chemical Engineers, The Electrochemical Society and Societe de Chimie Industrielle.

Dr. Dorr was born in Newark, N. J., in 1872. He received the B.Sc. degree from Rutgers University in 1894, the honorary degree of Master of Engineering in 1914 and the honorary degree of Doctor of Science in 1927 from the same institution. Honorary degrees have also been awarded him by the South Dakota School of Mines and by the Michigan College of Mining and Technology.

He spent several summers in the laboratories of Thomas A. Edison, the last as chemical experimenter with Mr. Edison himself. After graduation from Rutgers, he went west to serve as assayer and chemist for the Deadwood and Delaware Smelter Co. in the Black Hills. A decade later he was the inventor of the Dorr Classifier which has been called "the piece

(*Continued on page 14*)

For Underground Service Lines

ANACONDA COPPER and RED-BRASS

Anaconda Copper Tubes in straight lengths and coils... Anaconda "85" Red-Brass in straight lengths only – both are products of dependable quality. Made by the world's largest and most experienced manufacturer of copper and brass, and stocked by leading supply houses.

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Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter

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WATER TEST SETS
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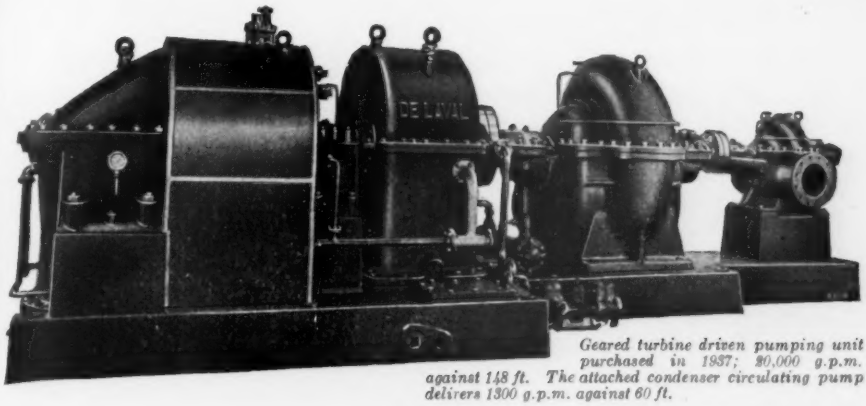

Geared turbine driven pumping unit purchased in 1937; 20,000 g.p.m. against 148 ft. The attached condenser circulating pump delivers 1300 g.p.m. against 60 ft.

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DURING the past **TWENTY YEARS** a large industrial concern in the Middle West has bought approximately

50 DE LAVAL UNITS

in part as follows:

1919—Motor driven pumps; 10,500 g.p.m. against 10 ft., 150 g.p.m. against 30 ft., and 1100 g.p.m. against 50 ft.
Turbine driven pumps; two for 4900 g.p.m. against 334 ft., two for 950 g.p.m. against 50 ft., two of 3000 g.p.m. against 231 ft., and two geared units for 16,000 g.p.m. against 68 ft.
1920—Two geared turbine driven generators; 500 KW each.
1925—Six motor driven 8 in. pumps.
1926—Two pumps for 1800 g.p.m. against 290 ft., one motor driven and one with dual drive, and three 5000 g.p.m. pumps against 173 ft., two motor driven and one with dual drive.
1927—10 in. turbine driven pump.
1928—**1929**—**1930** and **1931**—A number of small motor driven pumps.
1931—Geared turbine driven pump; 7 m.g.d. against 145 ft.
1934—Motor driven pump, 7000 g.p.m. against 90 ft.
1937—The geared turbine driven pump shown herewith; 20,000 g.p.m. against 148 ft.
1938—A 4 in. boiler feed pump.

Repeat orders imply satisfactory service and sound engineering advice. In fact, one of the customer's officers, who was Superintendent of one of the plants for 18 years, remarked:

"I have yet to receive poor advice from a De Laval man."

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(*Continued from page 12*)

of equipment that comes nearest to being in universal use in modern hydrometallurgy." Many adaptations of this and numerous other inventions by Dr. Dorr are now used in scores of branches of American industry, including water treating equipment familiar to water works men.

Harold L. Londo, Acting Superintendent of the Green Bay Water Department for the past year and a half, was named Superintendent, effective January 1, 1941.

After being graduated as a civil engineer by the University of Notre Dame in 1924, Mr. Londo worked three years with the Pennsylvania Highway Department. From 1927 to 1935 he served the City of Green Bay as Assistant City Engineer and in the fall of 1935 he was transferred to the Water Department as Plant Engineer.

Mr. Londo replaces James Church, who served as Superintendent for many years. Mr. Church has not entirely severed his relations with the Water Department, for he will serve as a Consultant.

Meredith Collier, employee of the Atlanta Water Works since March 10, 1896, has been appointed Superintendent of Construction and Dis-

(*Continued on page 16*)

American Water Works Association
61st Annual Convention
Toronto, Canada—June 22-26, 1941

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Single room, per day	$ 4.00
Double room, per person, per day	3.50
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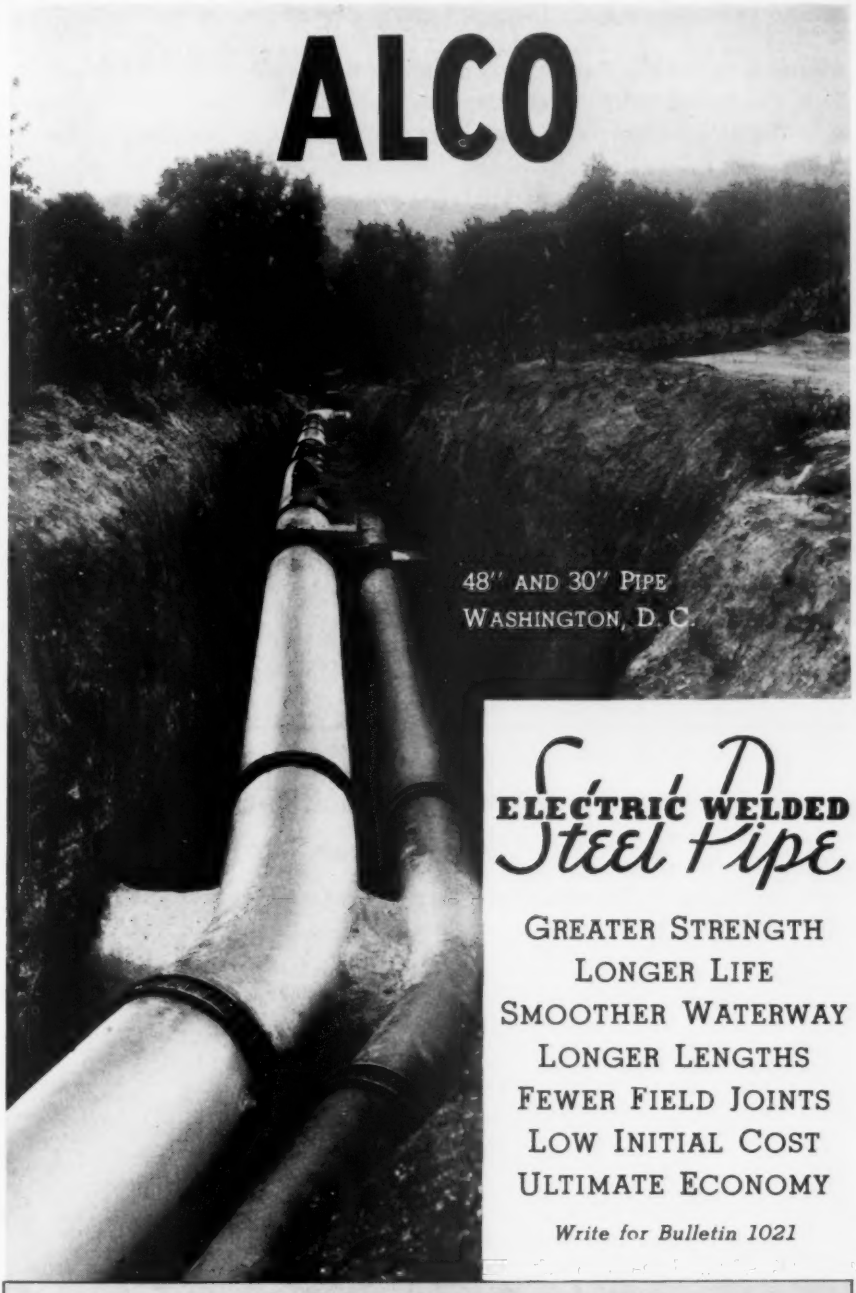

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LONGER LENGTHS
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AMERICAN LOCOMOTIVE COMPANY
ALCO PRODUCTS DIVISION
30 CHURCH ST., NEW YORK, N. Y. **DUNKIRK, N. Y.**

(*Continued from page 14*)

tribution to fill the vacancy incurred at the death of W. M. Rapp, Sr. This was a civil service appointment.

Mr. Collier has filled a number of positions in the department including machine shop mechanic, blacksmith and foreman of pipe line construction. He has been actively engaged in water works engineering as assistant to W. M. Rapp, Sr. for more than 25 years.

H. M. Freeburn, District Engineer for the Pennsylvania Department of Health, has accepted the position of Chief Engineer for the Philadelphia Suburban Water Company, Bryn Mawr, Pa., succeeding the late H. S. R. McCurdy. Mr. Freeburn has long been active in the water works field, having joined the Association in 1922. He served as Chairman of the Four States Section in 1938–39.

Public Administration Organizations: A Directory, 1941 has recently been issued by the Public Administration Clearing House, 1313 East 60th St., Chicago. It is a bound book of 187 pp., 134 of which are devoted to

(*Continued on page 18*)

Tentative Standard Specifications for Elevated Steel Water Tanks, Standpipes and Reservoirs

Another document for the betterment of water works practice. Produced jointly by the American Water Works Association and the American Welding Society.

Single Copies from A.W.W.A. Headquarters, 52 pp., $ .30.

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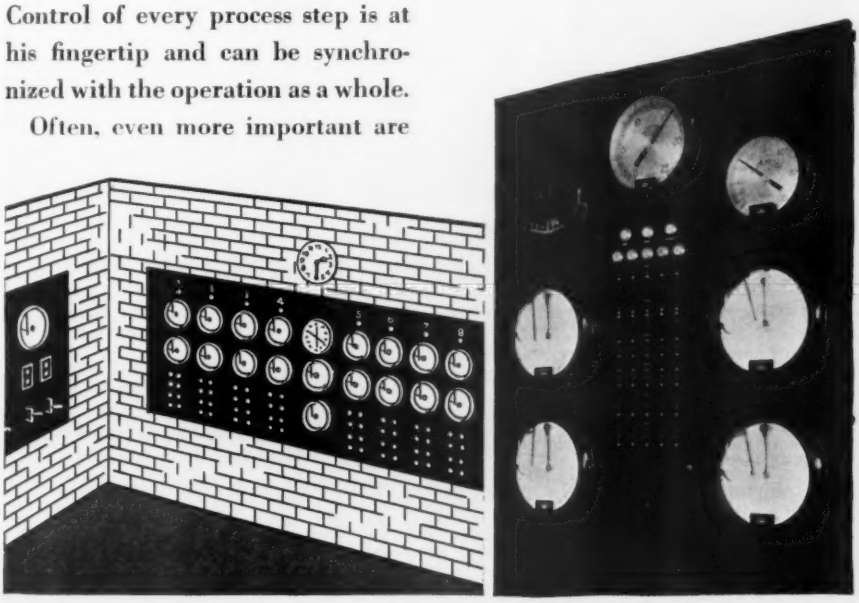


(*Continued from page 16*)

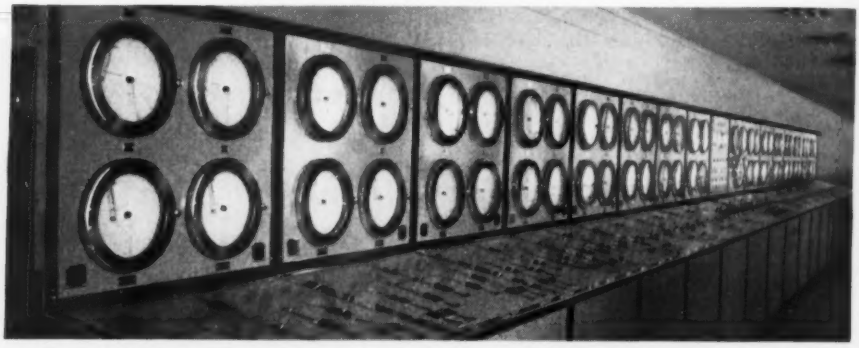
an alphabetical listing and description of organizations which are national in scope. Also included is a list of the organizations classified by fields of activity and a list of state and regional organizations. Copies are available from the publisher at $1.50 postpaid.

Index to A.S.T.M. Standards, 1940-41 will be furnished without charge on written request to the American Society for Testing Materials, 260 South Broad St., Philadelphia. Including tentative standards, 952 items are indexed.

All items are listed in the Index under appropriate key-words according to the particular subjects they cover. As a convenience a list of the specifications and tests is given in numerical sequence of their serial designations.

The Ninth Edition of the Crosby-Fiske-Forster *Handbook of Fire Protection* has just been published. Many of the sections have been completely rewritten and 150 pp. of new material on topics not covered in the previous edition have been added. The new edition is available at

(*Continued on page 20*)



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at the Scituate Filter Plant, Providence, R. I.

Sixty-one Builders Chronoflo Instruments, on this control panel, bring to the operator complete information, including:

1. **Total flow into and out of the plant;**
2. **Levels in filters, wash tank, and distant reservoir;**
3. **Loss of head and rate of flow from each individual filter.**

The complete "picture" is always before the operator. Guess work is eliminated and maximum efficiency is assured.

Bulletin 320, recently issued, should be in your file. It contains a full description of Chronoflo Instruments; and of their application in measurement of flow, liquid level, pressure, and temperature.

Write for a copy, address—

BUILDERS IRON FOUNDRY • PROVIDENCE RHODE ISLAND

MODERN PIPE *for* *Modern Service Requirements*

MONO-CAST *Centrifugal* PIPE

DIAMETERS 3" to 48" INCLUSIVE. FURNISHED *Enamelined* AT NO EXTRA COST

TIME has proved the enduring qualities of Cast Iron Pipe. But times have changed, are still swiftly changing. Today's and tomorrow's underground mains must do much more than merely resist corrosion. They must convey greater volumes, at higher internal pressures; they must withstand vastly increased external loadings; they must be adapted to an ever-widening range of service conditions. Mono-Cast Centrifugal Pipe possess the exceptional physical strength and uniformity necessary to meet the increasingly severe requirements of modern usage. That's why they are held in such high esteem by municipal officials, engineers, superintendents, industrialists and other in a position to know. In the future, as in the past, Mono-Cast Centrifugal Pipe will continue to serve most dependably at least cost per service year. Write for literature.

AMERICAN CAST IRON PIPE CO.

America's largest individual Cast Iron Pipe foundry. Daily foundry capacity 40,000 feet in all sizes from 3" to 48" inclusive. Complete line of highest quality Cast Iron Fittings.

FOUNDRY AND MAIN OFFICE, BIRMINGHAM, ALABAMA. BRANCH OFFICES: NEW YORK CITY, CHICAGO, MINNEAPOLIS, KANSAS CITY, DALLAS, SAN FRANCISCO, LOS ANGELES, PITTSBURGH, CLEVELAND

(*Continued from page 18*)

$4.50 per copy from the National Fire Protection Association, 60 Batterymarch St., Boston.

George Read, Meter & Service Superintendent for the Bureau of Water Works and Supply of Los Angeles, retired at the end of 1940 after 48 years of service.

In honor of his long service and in tribute to his personal qualities, 200 of his fellow employees attended a farewell banquet for him at the Los Angeles Breakfast Club—within a block of where Mr. Read and his family resided in Los Angeles 52 years ago. It was 48 years ago that Mr. Read met William Mulholland and obtained from him a job shoveling sand from a flume that diverted water from the Los Angeles River. This job started him on the road to the position in which he had 300,000 meters under his jurisdiction. Mr. Read's successor is George Sopp, formerly Meter & Service Inspector.

Speaking fourteen years ago about his work, Mr. Read said:

"The greatest problem I have today is to instill into my co-laborers

(*Continued on page 22*)

Pipe Laying Jobs
NEED NOT BE DELAYED

waiting for that initial leakage to stop. Trenches need not remain open, with resulting hazards to traffic • When you use *Tegul*-MINERALEAD those joints seal almost at once • You can backfill and clear up the street right away • *Tegul*-MINERALEAD is the sulphur-base, ingot form compound that

1—Seals initial leakage in a hurry.
2—Isn't hurt by rain, snow or flood.
3—Can't change composition in transit.
4—Needs no skilled labor, caulking or deep bell holes.
5—Makes permanently tight joints—much more resistant to thermal and mechanical shock.
6—Saves you labor, time and money.

A Tegul PRODUCT

Write The Atlas Mineral Products Company of Penna., Mertztown, Pa., Representatives (and stock carried) in many major cities.

Tegul-MINERALEAD

for Jointing Bell and Spigot Pipe

Cathodic Protection

The only positive method of preventing rusting, pitting and corrosion in steel water containers.

THE PATENTED

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METHOD

Steel Water Tanks
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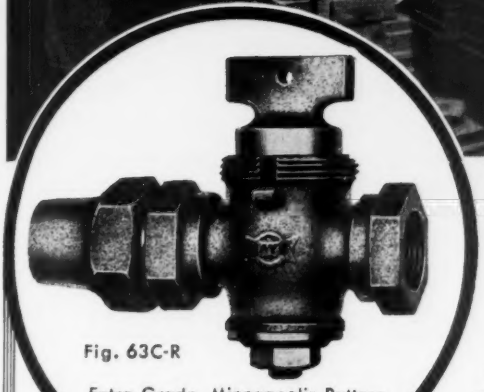

Fig. 63C-R

Extra Grade, Minneapolis Pattern, Round Way, Hays Radius Seal Copper Inlet x Female I. P. Outlet

1. Hays builds a one-quality water works brass line from (85-5-5-5 Mix).
2. Hays tests every piece at 200 lbs. hydrostatic or more.
3. Hays Brass features full water-way.
4. Hays individually ground-in plugs are specially lubricated for easy turning.
5. Water Works Standard Threading permits use of Hays Brass in any standard tapping machine.
6. Hays builds a complete line.

EVERY piece of Hays WATER WORKS Brass is made from this approved mix (85% copper, 5% tin, 5% spelter, 5% lead), unless otherwise specified. Hays' modern brass foundry with the continuous pour system adheres to this Water Works Brass formula. Over 71 years serving all parts of the U.S.A. have proved the high quality of this universal standard in all types of soils and climates.

Since 1869 Hays has built uniform, dependable water works brass that meets every localized requirement.

Write for Hays Catalog on the complete one-quality water service line.

COPPER • BRASS • LEAD • IRON

HAYS *Water Works* PRODUCTS

HAYS MFG. CO., ERIE, PA. • *Since 1869*

(*Continued from page 20*)

an appreciation of the absolute necessity of being courteous and giving unstinted service to the public.

"Poor water supply and many a complaint are not always the fault of the Department, but when a complaint, no matter how trivial, is not given courteous, prompt and cheerful attention, then the Department *is* at fault. The public has a right to demand efficient and courteous treatment and anyone who fails to give this is not loyal to the Department or to himself. He is actually biting the hand that feeds him.

"The Department of Water and Power and all other utilities are measured by the public according to the service given; hence, efficient service and courteous treatment is our mainstay."

Proportioneers, Inc. has recently issued Bulletin DEF for contractors and engineers engaged in defense work. Bulletin FUN describing methods of fungicidal disease control in foot-baths combined with regular swim pool purification has also recently been issued by Proportioneers, Inc., 9 Codding St., Providence, R. I.

(*Continued on page 26*)

CLEAN YOUR WATER MAINS

One does not have to be an expert mathematician to figure out that a clogged water main calls for a stronger pressure and that in turn calls for more coal—and literally burning up money. We can show you how to get dollar for dollar value out of every ton of coal. We can show you how to clean the water mains quickly and cheaply. Send us your address—that's all we ask of you.

National Water Main Cleaning Co.

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501 Howard St., San Francisco, Calif.
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Lengths of 10" K&M "Century" Pipe, with their "Century" Flexible Couplings ready for lowering into the trench and bolting together to form a leak-proof, tuberculation-proof line.

QUAKERTOWN, PA., CURES TUBERCULATION AND GETS AN UNEXPECTED 70% BONUS WITH *"Century"* PIPE

By replacing tuberculated lines with Keasbey & Mattison "Century" Asbestos-Cement Pipe, the Quakertown Water Company eliminated low water pressure once and for all. "Century" Pipe is corrosion-proof and tuberculation-proof. It will keep on delivering a full flow of water for generations.

The Quakertown Water Company had planned to replace only 1000 feet of the diseased pipe with new K & M "Century" lines on this occasion. This was done at so low a cost for pipe and laying that the budget permitted the installation of 700 more feet of "Century" Pipe than originally planned—a 70% bonus.

Write Keasbey & Mattison, asbestos specialists since 1873, for the free booklet, "Mains Without Maintenance." Address Dept. 1017.

Light weight and handling ease, plus the convenience of "Century" couplings, enormously reduce the time and cost of laying "Century" Pipe.

Mr. C. W. Freed, Secretary of the Quakertown Water Company *(left)* and Mr. W. Moffitt, Supt. Mr. Freed says, "We selected 'Century' Asbestos-Cement Pipe because it cannot tuberculate. Its overall cost proved so low that we were able to install 700 feet more than planned."

K&M best in asbestos

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WATER WORKS - SEWERAGE - UTILITIES
Baltimore, Md. Albany, N. Y.

Help Build up Your Association by Bringing in a New Member

SEND FOR APPLICATION BLANK

AMERICAN WATER WORKS ASSOCIATION
22 East 40th St.
NEW YORK CITY

(*Continued from page 22*)

A recycling control for attachment on meters used for the initiation of automatic processes has recently been developed by the Permutit Company, 330 West 42nd St., New York. The control is constructed so that when a predetermined quantity of water has passed through the meter a contact is made which initiates the automatic cycle after which the control resets itself and is automatically ready for a repeat performance.

Hand-operated hoisting equipment, trolleys, and cranes are described in a new edition of Catalog 12-C recently issued by the Wright Manufacturing Division of the American Chain and Cable Company, Inc., York, Pa.

"Instrumentation of Modern Sewage Disposal Methods" is the recently issued Bulletin 232 of The Foxboro Company, 150 Neponset Ave., Foxboro, Mass. Its 20 pages contain a very comprehensive diagrammatic and photographic presentation of the subject. Another recent bulletin of The Foxboro Company is DMF 731 describing flue gas temperature control.

Ludlow Valve Manufacturing Co. has announced the election of Alfred W. Thompson as President, Treasurer and General Manager. Mr. Thompson was formerly Vice-President and General Manager. He succeeds as President Livingston W. Houston, who has been associated with the Company for 22 years and as President for the past eight years. Mr. Houston was elected Chairman of the Board and will continue in an active executive capacity in the management of the Company.

Joseph H. Egolf, associated with the Company for the past 50 years and Treasurer for the past eight years, retired from active service on December 31, 1940. Other new officers elected were Harry Hoffman of 30 Pine Street, New York City, a Vice-President, and John Ireland of Troy, an Assistant Secretary and Assistant Treasurer. Robert Bischoff, formerly associated with the Koppers Company in a sales and engineering capacity, has been appointed Sales Manager. He succeeds Mr. Egolf.

J. H. P. Hughart, Johns-Manville Transite Pipe Manager for the Chicago area, has resigned his position to rejoin the U. S. Navy as Lieutenant Commander for the duration of the present emergency. Mr. Hughart will be stationed at Northwestern University in Chicago, in the Department of Education. V. C. Wyle, junior salesman in Northern Indiana for Johns-Manville, has also accepted active duty in the Navy with the rank of Ensign.

To fill the position left by Mr. Hughart, Johns-Manville has selected L. P. Lessard who from many years experience is familiar with the problems of water works in the Chicago district. In addition to this change, Johns-

(*Continued on page 28*)

HTH *Saves the Day!*

With Emergency Chlorination Job For Rochester, N. Y.

Street flushing tank preparing HTH solution to be injected into hydrants by auxiliary pumper.

Wm. H. Roberts, Commissioner of Public Works, Rochester, N. Y. writes—

"Following the accidental introduction of impure river water into our city drinking water mains on December 10th and 11th, we discovered the contamination was so widespread that regular chlorination at our reservoirs would take considerable time.

"We made direct injections of HTH solutions into the mains at many points of the City by using our regular equipment. Each crew consisted of a street flushing tank and an auxiliary pumper.

"Five pounds of HTH were added to each 2,500-gallon tank of water and pumped back into the mains through the fire hydrants.

"We believe this method of chlorination with HTH solutions enabled us to save two weeks time in purifying our drinking water system."

• River water (four million gallons of it!) accidentally enters the drinking water system at Rochester, N. Y. Liquid chlorine is added at the reservoirs but does not reach the dead ends of a drinking water system with 500 miles of mains. It is decided to use hypo-chlorination to speed up purification of the drinking water, and an emergency shipment of Sanitation HTH is rushed to the scene.

Flushing trucks of 2,500-gallon capacity speed to hydrants at strategic points in the city and auxiliary pumpers inject solutions of HTH into the hydrants. The solution is approximately 168 p.p.m. available chlorine. The operation is started about 4:30 P.M. December 15, and on the evening of the second day the drinking water is declared pure. Says Wm. H. Roberts, Commissioner of Public Works, Rochester—"*We believe this method of chlorination with HTH solutions enabled us to save two weeks time . . .*"

Once again—HTH saves the day—proves its value as a standby source of chlorine. Proves why hundreds of water works throughout the country rely on Sanitation HTH not only for quick, efficient service when emergencies arise but also for many everyday sanitation jobs. Be Prepared With Mathieson HTH. It contains 70% available chlorine, is quick acting, easily soluble, easily transported. Write or wire for full information and your nearest source of supply.

HTH comes in 5-lb. cans with replaceable caps, packed 9 cans to the case; also in 100-lb. drums.

THE **Mathieson Alkali Works** (INC)

60 EAST 42ND STREET, NEW YORK, N. Y.

LIQUID CHLORINE . . . HTH . . . SODA ASH . . . CAUSTIC SODA . . . BLEACHING POWDER . . . BICARBONATE OF SODA . . . AMMONIA, ANHYDROUS and AQUA . . . PH-PLUS FUSED ALKALI . . . DRY ICE . . . CARBONIC GAS

(*Continued from page 26*)

Manville has created in the territory these new positions: D. A. Decker, formerly Chief Engineer of the Concrete Pipe Association will handle the sale of Transite Pipe in Northern Illinois; Gilbert Smith, formerly associated with Consoer, Townsend and Quinlan, Chicago Consulting Engineers, will be in charge of Transite Pipe sales in Northern Indiana; and Verne Coulson, formerly Pipe Installation Instructor for the Chicago district, will take charge of Transite Pipe sales for Eastern Wisconsin.

"Duplex" tubing, consisting of outer and inner layers of different alloys, is said to reduce corrosion and cut costs, according to an article in January issue of "The Pioneer," monthly magazine of Niagara Alkali Company and Electro Bleaching Gas Co.

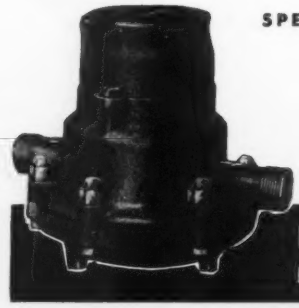
Other interesting features in "The Pioneer" include: Advice to Industrial and Municipal Officials on the Draft . . . How Scale Models of Streams Help Fight Floods . . . Chlorination Combined With Recreation . . . Sewage Gas Drives Buses . . . New York Photos Taxable Buildings for "Rogues Gallery" . . . Paper Printed by Electricity, Not Ink . . . Fiberglas Neckties, Airplane Wings . . . New Glass Folding Garage Doors . . . Kettle Speeds Dyeing Process . . . Chlorine and Caustic Soda Used to Make Glycerine.

Copies of "The Pioneer" will be sent without charge to any executive upon request of Niagara Alkali Company, 60 E. 42nd St., New York.

(*Continued on page 30*)

F. G. Cunningham, partner in the firm of Fuller & McClintock, died Jan. 27 at Fairfield, Conn. Mr. Cunningham was born in Mansfield, Ohio, and graduated from the Engineering School of the University of Pennsylvania. He served as Lieutenant in the Engineering Corps during the First World War. He was onetime Chairman of the Publications Committee of the A.W.W.A. and was a director of the Association, 1931–1935.

FIRST QUALITY METERS EXCLUSIVELY



SPECIFY *American* or *Niagara*

(BRONZE CASE) (IRON CASE)

Water Meters

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Established 1892 2914 Main St., Buffalo, N. Y.

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YOU CAN'T OVERDOSE WITH

Ozonation

THE SPEEDED UP OXIDATION PROCESS TO REMOVE BAD TASTES, ODORS AND COLORATION FROM DRINKING WATER

Nature oxidizes to purify. Ozone is pure oxygen with an extra oxygen atom to the molecule. Ozone is a ready and powerful oxidizing agent. Ozonation is nature in high gear.

Introduced into water, ozonation adds nothing noxious or nauseous. Instead, ozonized air—super-aeration if you please—"cold burns" the obnoxious organic pollutions or changes soluble iron or manganese compounds to insoluble oxides.

The proper dosage of ozone is that which meets the ozone demand of the water. However, too little or too much has no deleterious effects.

There is no need for hair-trigger control with ozone.

OZONE PROCESSES
INCORPORATED
1500 WALNUT STREET, PHILADELPHIA

Ozone Processes, Incorporated, is an operating member of a well-established and soundly financed group, which has been serving American industry for over 60 years. The management is experienced and keenly aware of its responsibility to the Water Works Industry. This explains the thorough research and skilled engineering supporting every move we make in this field.

Phenolic or algae tastes and odors are generally economically removable with ozonation. We invite you to discuss your palatability problem with us.

(*Continued from page 28*)

A manual of recommended plumbing practice has been issued as the result of the efforts of a committee of representatives of Federal agencies known as the Subcommittee on Plumbing of the Central Housing Committee on Research, Design, and Construction. The Subcommittee has taken into consideration available recommendations of other bodies and results of research performed at the National Bureau of Standards. Part I consists of an introduction explaining the origin of the work. Part II contains recommendations regarding necessary sizes of piping, precautions against pollution of water supply, permissible types of venting, and other matters customarily covered in plumbing codes. Part III contains information useful in applying the recommendations, including illustrative interpretations of the specific requirements in Part II. The recommendations are presented as suitable for adoption by Federal agencies engaged in actual plumbing work or in passing upon plans of structures containing plumbing.

The 72-page covered manual is known as Report BMS66 and is for sale by the Superintendent of Documents, Washington, D. C., price 20 cents.

(*Continued on page 32*)

STOP RUST
with
RUSTOP

Cathodic Protection ends rust
●
Cleans old tanks
●
Keeps new tanks clean
●
No paint—No taste
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FILTER SAND
99 Per Cent Pure Silica
Washed, dried and manufactured to your specifications
Write for Prices on Bulk, Carload or Bags
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$3.20 to A. W. W. A. Members for cash with order
Write today
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22 East 40th Street, New York

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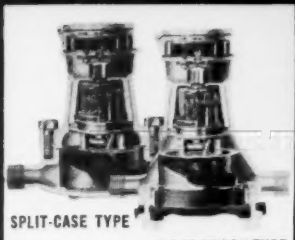

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Number 2 of a Series

EFFICIENCY experts will tell you that lost motion is one of the major causes of inefficiency. An example of this, in a meter shop, is the time and effort spent in finding the proper repair parts, and scraping and fitting them at the bench.

Interchangeability is the cure for both these ills; and you get it in Trident Meters. Standard new parts fit all casings, new or old, perfectly.

The SYMBOL of SUSTAINED ACCURACY

NEPTUNE METER COMPANY ● 50 West 50th Street, NEW YORK CITY

BRANCH OFFICES IN CHICAGO, SAN FRANCISCO, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.
NEPTUNE METERS, LTD., 345 SORAUREN AVENUE, TORONTO, CANADA.

(*Continued from page 30*)

The Tale of the Cross-Connection at Rochester, N. Y., is growing day by day. Some of it was given on page 16 of the January News of the Field and the December 23, 1940 issue of *Health News* (published weekly by the New York State Department of Health) carried a preliminary account of the pollution of Rochester's public water supply which occurred when a valve on a cross-connection between the fire supply, derived from the Genessee River (Holly system), and the potable supply (Hemlock system) was opened by mistake on December 11. Since the earlier publication supplementary information has been obtained and published as follows in the January 6, 1941 *Health News.*

"*Relation of Fire System to Potable System:* Normally the pressure in the fire supply system is maintained by either or both of two five-hundred gallon per minute pumps which draw water from a small suction well located near the fire supply pumping station. This well is supplied only with water from the potable water supply system. There is also a large suction well at the pumping station which may be supplied either from the river or through a twelve-inch main of the potable supply which discharges into the suction well above the flow line. Except in case of a

(*Continued on page 34*)

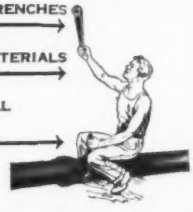
3 *Money, Time and Labor Saving Features of*

UNIVERSAL
CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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386 FOURTH AVENUE, NEW YORK, N. Y.

Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

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STREET_____

CITY_____

EDSON
DIAPHRAGM PUMPS

Hand Operated—size 2″, 2½″, 3″, 4″
Power Operated—size 3″ and 4″
Open Discharge or Force Pump
Skid, Truck or Trailer Mounted

Complete Pump Outfits, Genuine Edson Pumps, Suction Hose, Brass Couplings, Bronze Clamps, Red Seal Diaphragms, Brass Strainer or Foot Valve, Hose Spanners, Adapters, Etc. Brass Hydrant Pump.

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and

GRAND FORKS
NORTH DAKOTA

Now Enjoy

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MODERN
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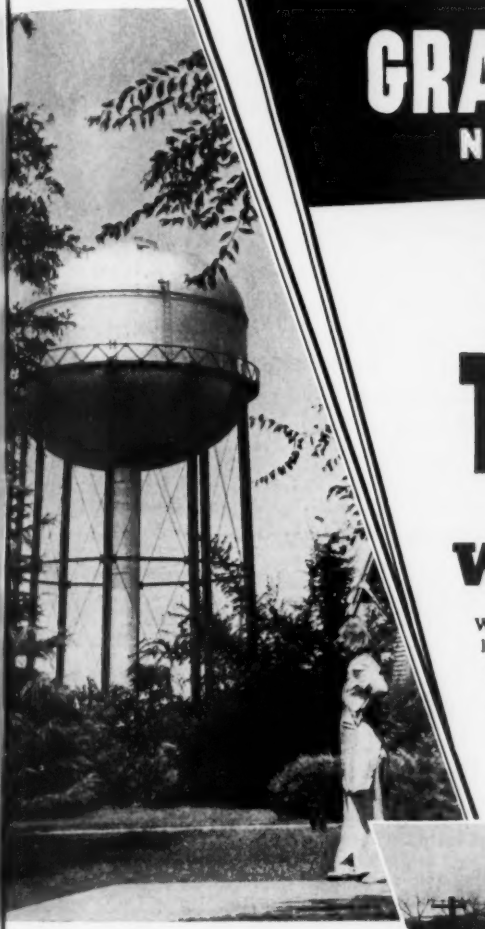

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(*Continued from page 32*)

large fire, the lines carrying water from the river to the large suction well are closed and the fire pumps are supplied from the potable water supply system. In the event of a large fire, the valve on the lines connected with the river supply are opened.

"In 1928 the city manager of Rochester ordered the elimination of all cross-connections (ten known to exist at that time) between the public drinking water system and the high-pressure fire system using Genesee river water as an auxiliary source of supply. The removal of these cross-connections was reported to have been carried out. Record maps of the city water department, however, indicate that the valves on these connections had been 'sealed' rather than removed. In at least one instance, the valve had been 'sealed' merely by filling the gate boxes with broken stone.

"*Pollution of Potable Supply Through Cross-Connection:* On December 11, following a reported leak in a valve in one of the city streets, a crew of the water department was assigned to make repairs. On completion of the repairs the workmen, having found the valve closed, opened it without notifying the water department officials. This was done apparently in the belief that the valve was on the potable water system instead of being one of the cross-connections between the fire and drinking water systems.

(*Continued on page 36*)

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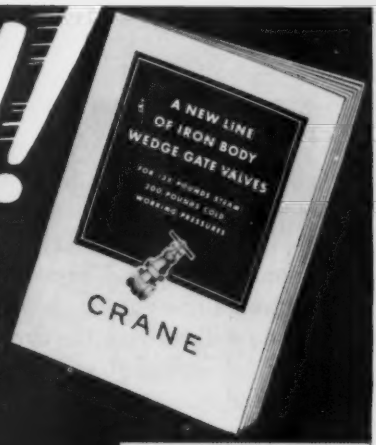

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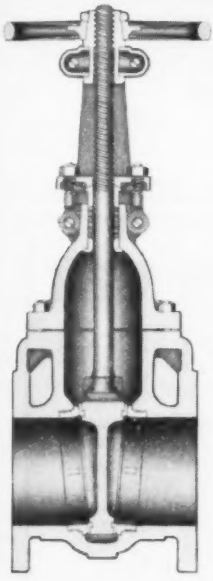

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(*Continued from page 34*)

"After this valve was opened, the gauge in the pumping station of the fire supply showed a marked and sudden reduction of the pressure in the fire system which normally is much greater than that in the potable water supply system. The large fire pumps were put into operation in an effort to maintain normal pressure in the fire system. During the first hour, the fire pumps were supplied with potable water discharged into the large suction well through the overhead discharge pipe. As this pipe was unable to furnish sufficient water for the fire pumps, the potable supply line was closed off and the valves taking water from the river were opened. As a result river water was pumped into the fire system and, through the opened cross-connection, into the potable system. Pumping of river water continued during the night while emergency crews from the water department searched for a supposed leak in the fire system. At eight o'clock on the morning of December 12, the opening of the valve in the street on the previous afternoon was reported to the water department and this valve was closed a few minutes later. The volume of river water pumped during this period was approximately five million gallons.

(*Continued on page 38*)

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(*Continued from page 36*)

"It was apparent that the pumping of this large volume of river water had resulted in widespread pollution of the potable distribution system particularly since the river water was pumped during the night when the consumption of water in the city was at a minimum.

"As soon as the situation became known, the city superintendent arranged for slushing the system and installing chlorine apparatus to treat the water flowing from the Cobb's Hill and Highland Park distribution reservoirs of the potable supply in an endeavor to sterilize the distribution system and to eliminate as much of the polluted water as could be removed by widespread flushing of hydrants.

"*Chlorination of Potable Supply with Hypochlorite Solution:* Following a conference of local and state health officials, immediate steps were taken to obtain additional equipment in an endeavor to increase the amount of chlorine applied to the water supply from the Cobb's Hill and Highland Park reservoirs. Chlorine equipment was obtained from adjacent municipalities and from manufacturers in Buffalo but it was apparent after the second day that the chlorine residual was increasing very slowly and was not reaching all portions of the distribution system. Accordingly, on the

(*Continued on page 40*)

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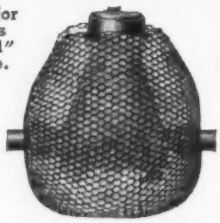

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(*Continued from page 38*)

morning of December 15, arrangements were made to procure a ton of HTH (high-test hypochlorite). With the assistance of personnel and equipment from the Department of Public Works including street flushers and pumpers, hypochlorite solution was pumped into the water distribution system through hydrants. Routes were mapped out covering the whole north end of the city and extending a short distance in the southerly section where laboratory examinations indicated that the water supply had been polluted. In the meantime the system was flushed through 165 hydrants.

"At a meeting of city and state health officials on the evening of December 17, it was agreed on the evidence of laboratory tests and orthotolidine tests of samples collected from many points in the city showed that the system had been effectively chlorinated and that the water supply was safe. The city health officer announced to the public that boiling the city water was no longer necessary as a safety measure.

"It was fortunate that the Department of Public Works of the city of Rochester had available a large number of modern street flushers and pumping equipment efficiently manned. This equipment and the available organization made it possible to accomplish the sterilization of the large mileage of water mains in a fraction of the time that would have been required had sterilization of the distribution system been attempted simply by the introduction of chlorine into the distribution reservoirs. There are about 500 miles of mains in this system. So far as known, this method of sterilization of so large a distribution system has never been employed heretofore.

"*Plan for Abandonment of River as Source of Fire Supply:* Information obtained during the emergency period indicated that early records relating to the construction of the fire pressure system are lacking. This system was installed in 1873. During the summer of 1940 in the course of a paving project, a cross-connection was discovered of which there was no record. In view of the uncertainty as to the possible existence and location

(*Continued on page 42*)

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(*Continued from page 40*)

of other cross-connections, the continued use of the river water as an auxiliary source would be an ever-present public health hazard. At a conference, therefore, on December 18 with the representatives of the city administration and of the fire insurance interests, Mr. Earle Devendorf, associate director of the Division of Sanitation of the State Department of Health recommended that immediate steps be taken to provide for the abandonment of the use of the river water as a source of auxiliary fire supply. It was decided that engineers representing the fire insurance interests would study this problem and submit a plan without delay.

"At a subsequent conference on December 27, a plan for abandoning the river supply was agreed on. This plan provides for the installation of a three-million gallon covered reservoir supplied only with water from the potable water supply system from which the fire pumps will then draw water exclusively for fire-fighting purposes."

Also reported in the same issue of *Health News* under the head "No Typhoid Reported as Yet From Rochester" is the following:

"In the days immediately following the pollution of the Rochester public water supply, there occurred a wave of mild gastroenteritis. Most of the cases had onset prior to December 14 and the illnesses usually lasted less than twenty-four hours. It is estimated that approximately 1000 persons consulted physicians but undoubtedly many times that number of illnesses actually occurred. Specimens of feces and blood submitted by Rochester physicians to the Rochester Health Bureau Laboratories, the number of which reached a peak on December 16, failed to reveal the presence of any typhoid, paratyphoid, enteritidis or dysentery organisms. Through noon on December 31, no cases of typhoid fever had been reported.

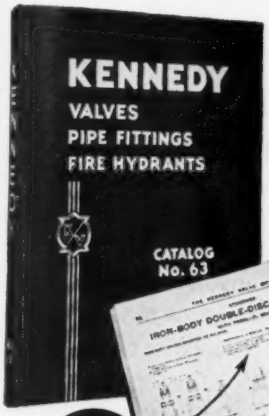
"This would seem to indicate that if cases of typhoid fever are to occur, it is likely that there will not be an extensive epidemic. Owing to a number of factors it is also possible that there will not be any typhoid fever cases in spite of the extensive pollution indicated by the bacteriological examinations of samples of water throughout the city and the initial wave of gastroenteritis.

"First, Rochester no longer discharges its own sewage into the Genesee river and all but one of the municipalities above Rochester have sewage treatment plants.

"Second, because of rains and melting snow, the river was high at the time the river water was pumped into the Rochester drinking supply with the result that the pollution present was considerably diluted.

"Third, typhoid fever is not nearly so prevalent as formerly so that sewage contains fewer typhoid germs from active and convalescent typhoid cases. In addition, the number of typhoid carriers undoubtedly is constantly diminishing. Only a few years ago, the initial wave of gastro-

(*Continued on page 44*)



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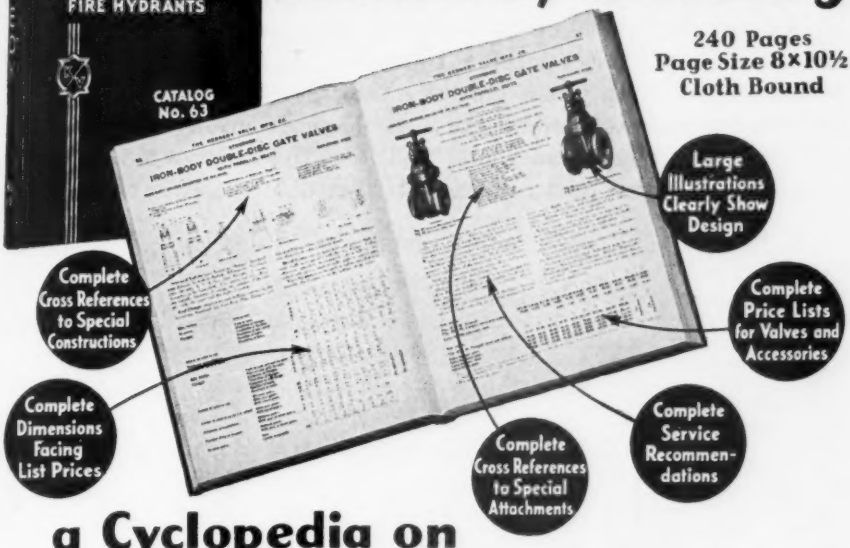
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(*Continued from page 42*)

enteritis following such heavy pollution of the water supply would inevitably have been followed by a wave of typhoid fever.

"Fourth, the period during which the polluted water was available, prior to the institution of corrective measures and warnings to the public that the water was polluted, was comparatively brief. The methods used in spreading the knowledge of pollution were probably more extensive and effective than any heretofore employed. In the past, knowledge of pollution has frequently come only after the cause of an outbreak of gastro-enteritis has been ascertained, the water having remained polluted for a matter of days rather than hours." [Three typhoid cases have been reported but none has been definitely attributed to the cross-connection.]

(*Continued from page viii*)

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HARDIN, EUGENE A. From Illinois to Four States
KRANASKAS, A. J. From West Virginia to Southeastern
MAHL, CARL E. From Ohio to Kentucky-Tennessee
MOORE, THOMAS F. From Ohio to Michigan
PARDEE, HOWARD J. From New York to New Jersey

News of the Field

The Distaff Side of the A.W.W.A.

When, on June 4, 1912, Mrs. Jennie D. Hardy, Secretary and Treasurer of the Charleston Light and Water Co., Charleston, S. C., was admitted to Corporate Active membership in the A. W. W. A., she became the first of a small procession of feminine workers in the field to hold a membership certificate. There are now eight women among the nearly

Dorothy A. Margolin

4,000 Association members, and here is proffered the Association as a whole a more intimate acquaintance with its women colleagues.

Of the present feminine representation, half are employed on the staff of the Bureau of Water Works and Supply of the Department of Water and Power of Los Angeles.

Mrs. Dorothy A. Margolin, a new Association member, is now senior member of the laboratory staff there. She entered the employ of the Bureau as Assistant Biologist in 1925, and has held her present position

(*Continued on page 2*)

(*Continued from page 1*)

of Water Chemist for the past twelve years. In addition to performing routine chemical analyses (including those for calcium, magnesium, sodium, potassium, sulfate, fluorine and silica), Mrs. Margolin collaborates on problems relative to analytical methods, corrosion and water treatment.

Mrs. Madeline Lynch Lake, an Active Member since October, 1934, has had nine years' experience in the Bureau's laboratory. She holds the position of Water Bacteriologist and has carried on research work involving productivity tests on various media and parallel plating on ferrocyanide citrate media as compared with liquid media.

Madeline Lynch Lake

Mrs. Marguerite S. Rudser has held an Active membership in the Association since October, 1935. She is a laboratory technician with eight and one-half years of experience in water analysis problems in the Los Angeles Bureau of Water Works and Supply.

The final member of the California group is Mrs. Mary A. L. Riddle, an Active Member of the Association since July, 1937. Mrs. Riddle has been working in the Bureau's laboratory for eleven years, first as Laboratory Assistant, and, for the past three and one-half years, as Water Chemist in the Sanitary Laboratory.

(*Continued on page 4*)

Marguerite S. Rudser

Mary A. L. Riddle

Louise E. McGrath

Lois Sutherland

(*Continued from page 2*)

Another woman member of the Association is Miss Louise E. McGrath, Vice-President of the Booth Chemical Co. of Elizabeth, N. J., a member since July, 1939.

Miss McGrath's experience in the field began, after graduation from Hunter College in 1918, in the employ of the Booth Chemical Co. where she remained for one year. The next year she spent as Assistant Chemist for the Babcock & Wilcox Co. of Bayonne, N. J., after which she returned to her first post to remain for twelve years. In 1932, she went back to Hunter College to teach Freshman chemistry and to do graduate work at Columbia University until 1938, when L. M. Booth, President of the Booth Chemical Co., died and she was called upon to carry on his work.

Miss McGrath's experience has been in the field of water purification and treatment, including not only analysis but the actual operation of water systems, with control of methods and treatment. Mr. Booth had obtained several water conditioning patents and left several pending patents with which Miss McGrath has worked. These include the development of the use of bentonite in the field of water conditioning in paper making as well as the treatment of waste waters.

A member of the Finance and Accounting Division of the Association is Miss Lois Sutherland who is Treasurer of the Paducah Water Works, Paducah, Ky. She has been with the Paducah Water Works since January, 1931, two months after the city purchased the water system. Her membership is as a corporate representative and dates from January, 1934.

(*Continued on page 5*)

R. Beverstock Smith

Selma Gottlieb Kallis

(*Continued from page 4*)

Miss Sutherland's pre-water-works experience in the field of finance included six years as Secretary-Treasurer of the Paducah Finance Corporation and a year with the Broadway Motors Co. of Paducah.

Mrs. R. Beverstock Smith is the eighth member of the group. Mrs. Smith is Vice-President and Treasurer of the Farnan Brass Works Co. of Cleveland, Ohio, positions which she has held for the past fifteen years. After high school in Toledo, Ohio, she attended Smead's Seminary there, then the Academy of Visitation, Mobile, Ala., and Spencerian College and Cleveland College in Cleveland. Mrs. Smith became an Active Member of the A. W. W. A. in July, 1938.

Mrs. Smith is unlike many vice-presidents, for she is very active in the management of Farnan's business. Besides treasuring Farnan's funds, she supervises the auditing and office force and occasionally enters into the activities of the sales department. Farnan Brass Works, by the way, as one of the old established manufacturers of water works materials, has held an Associate membership in the Association since May, 1892.

The woman member of longest standing is Mrs. Milton A. Kallis, known as Selma Gottlieb to readers of the Abstract Section of the JOURNAL. She joined the Association in May, 1933.

Mrs. Kallis claims that her interest in the field of water supply stems from her childhood in Pleasanton, Kan., where drinking water was so scarce that, during drought, it had to be brought in by tank car.

Her education took her through A.B. (1922), A.M. (1924) and Ph.D. (1927) degrees at the University of Kansas, where during her graduate

(*Continued on page 6*)

(*Continued from page 5*)

work she served as Assistant Instructor in Chemistry and, in 1924, received appointment as Chemist in the Water and Sewage Laboratory of the State Board of Health, located on the campus. In 1925 she returned to the chemistry department and resumed her graduate work; and, in 1927, with her doctorate, was reappointed to her former position in the Water and Sewage Laboratory. Her work there as a chemist included routine chemical analyses on water and sewage, work on the determination of fluorides in Kansas waters and, under a co-operative agreement with the U. S. Bureau of Mines, a study of the pollution of Kansas fresh water sources by brines from oil field development.

Since the teaching of the course in water analysis at the University was at the time transferred to the Water and Sewage Laboratory, Mrs. Kallis was also appointed Assistant Professor of Chemistry. She remained in these positions until the fall of 1935.

She now lives in Waukegan, Ill., and since 1935 she has devoted her time to "domestic pursuits" (Marian, five, and James, two) and abstracting for the JOURNAL.

The Association is happy to present these brief sketches of the activities of women who participate in Association affairs, and it is to be hoped that others active in the field will join the ranks, for the Association has something to offer every water works man and woman.

(*Continued on page 8*)

A. C. Hacker, Vice-President of the Hacker Pipe & Supply Company, Los Angeles, died on January 26 at St. Luke's Hospital, Pasadena, Calif.

"Jack" Hacker was born in Ireland, of American parentage, in 1882. One of his first jobs was with the General Fire Extinguisher Company. He later became associated with the Grinnell Company, and served as Manager of that Company's Philadelphia Plant. In 1912 he went to Los Angeles to become associated with the Los Angeles Gas Company. In 1919 he rejoined the Grinnell Company, established that concern's Pacific Coast branch in Los Angeles and served as Sales Manager until 1931, when he decided to enter the jobbing field for himself.

Mr. Hacker and his partner, J. R. Dickinson, starting their business at the depth of the depression, established a substantial trade in the petroleum, water works, gas and industrial fields. Mr. Hacker had been an A. W. W. A. member since 1929.

H. K. BURTON

Superintendent of Waterworks
Salt Lake City, Utah

writes: "About 65 years ago Salt Lake City laid approximately 1½ miles of 20- and 24-inch cast iron pipe for its then principal supply main. In 1920 about a mile of the pipe was removed and relaid in the eastern part of the city. This salvaged pipe was in excellent condition. Both the original main and the relocated portion are now in service. There are about 380 miles of cast iron pipe in our distribution system. *Maintenance cost per mile per year is negligible.*"

H. K. Burton

LOW MAINTENANCE

is an economy factor in cast iron pipe that is usual, rather than exceptional, in water works experience. An impartial survey among nearly 200 water works superintendents shows that the maintenance cost of cast iron pipe is far below that of any other pipe material which has been in use long enough for the recording of conclusive data.

CAST Q IRON

Look for the "Q-Check" Registered trade mark.
Cast iron pipe is made in diameters from 1 1/4 to 84 inches.

The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois

CAST IRON PIPE
PUBLIC TAX SAVER NO. 1

(*Continued from page 6*)

Herbert H. Brown, Civil Engineer for Milwaukee, Wis., and an employee of the city of Milwaukee for about 20 years, has been appointed Superintendent of Water Works there. Walter M. Swietlik, Commissioner of Public Works, who certified Brown's name to the City Service Commission, later announced that the appointment was effective February 10. Mr. Brown succeeds Henry P. Bohmann who retired January 1.

Mr. Brown, a graduate of the University of Wisconsin, has served as Engineer in charge of design and construction of pumping stations and the new Milwaukee filtration plant. He is presently serving as A. W. W. A. Director from the Wisconsin Section.

W. H. Wisely, Engineer-Manager of the Urbana and Champaign (Ill.) Sanitary District, has added to his duties that of serving as the new Executive Secretary of the Federation of Sewage Works Associations. Mr. Wisely has long been active in the sanitary engineering field, having served for the past four years as Secretary-Treasurer of the Central States Sewage Works Association. He was born in Coulterville, Ill., in 1906 and attended schools in Coulterville and Rankin, Ill. In 1928 he was graduated

(*Continued on page 10*)

DIFCO

Detection of Coli in Water

This group of Difco Dehydrated Culture Media is recommended for the detection and confirmation of the presence of coliform bacteria in water.

Each medium is prepared to conform to all requirements of "Standard Methods of Water Analysis" of the A.P.H.A. andA.W.W.A.

Bacto-Lactose Broth
Bacto-Endo's Agar
Levine's Eosin Methylene Blue Agar, Difco
Bacto-Brilliant Green Bile 2%
Bacto-Crystal Violet Lactose Broth
Bacto-Formate Ricinoleate Broth
Bacto-Fuchsin Lactose Broth

•

Specify "DIFCO"

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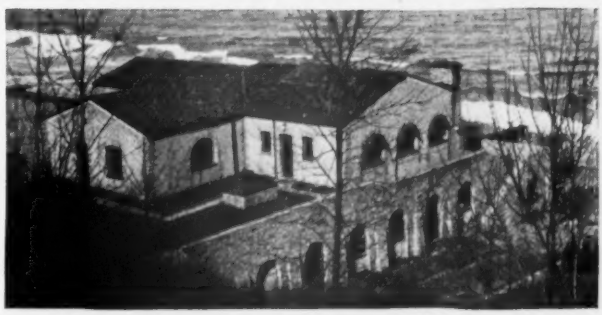
DIFCO LABORATORIES
INCORPORATED
DETROIT, MICHIGAN, U. S. A.

GLENCOE, ILLINOIS USES GENERAL CHEMICAL Aluminum Sulfate and Anhydrous Bisulfite of Soda



The attractive Glencoe water purification plant on the shore of Lake Michigan supplies pure, wholesome, palatable water every day of the year.

Lake Michigan is virtually an inexhaustible source of reasonably pure water . . . but frequent storms stir up sediment and make the water unsightly. Conversely, calm weather and bright sunlight stimulate the growth of various micro-organisms, some of which clog filter surfaces, while others impart disagreeable tastes and odors to the water. *For more than ten years, Glencoe has successfully overcome these problems with the aid of General Chemical Company water treatment chemicals.*

General Chemical Aluminum Sulfate coagulates and settles out turbidity and suspended micro-organisms. Subsequent super-chlorination in the mixing basin removes residual tastes and odors, keeps the filter sands sweet and clean.

General Chemical Anhydrous Bisulfite of Soda (A.B.S.) removes excess chlorine in the filtered water. At Glencoe this is applied as a solution—in the proportion of 1.6 parts of A.B.S. to 1.0 part of residual chlorine. (General Chemical A.B.S. is a dry powdered material which can be dry or solution fed, as desired.)

* * *

We will welcome your inquiries on any of the following General Chemical products for use in water treatment and will gladly offer assistance on their use:

ALUMINUM SULFATE • ANHYDROUS BISULFITE OF SODA • AQUA AMMONIA • SODIUM SILICATE SOLUTION • MONOSODIUM PHOSPHATE • DISODIUM PHOSPHATE • TRISODIUM PHOSPHATE • TETRA-SODIUM PYROPHOSPHATE • SODIUM SULFATE

Plan now to attend the 61st Annual Meeting of the American Water Works Association, Royal York Hotel, Toronto, Ontario, June 22-26, 1941.

GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK, N. Y.

Sales Offices: Atlanta • Baltimore • Boston • Buffalo • Charlotte (N. C.) Chicago • Cleveland • Denver • Detroit • Houston • Kansas City Milwaukee • Minneapolis • Newark (N. J.) • New York • Philadelphia Pittsburgh • Providence (R. I.) • St. Louis • Utica (N. Y.)
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Pacific Northwest Sales Offices: Wenatchee (Wash.) • Yakima (Wash.)
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Montreal • Toronto • Vancouver

(Continued from page 8)

with the degree of B.S. in Civil Engineering from the University of Illinois. He is a candidate for the professional degree of Civil Engineer from the University of Illinois in June, 1941. From September, 1926, to June, 1928, concurrent with undergraduate work at the University of Illinois, he served as Engineering Assistant in the State Water Survey. From June, 1928, until accepting his present position as Engineer-Manager of the Urbana and Champaign Sanitary District, he was Assistant Sanitary Engineer, Illinois Department of Public Health, where his activities were almost entirely in stream pollution, sewage treatment and industrial waste treatment.

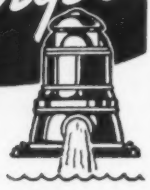
Mr. Wisely's headquarters address as Executive Secretary of the Federation of Sewage Works Associations is Box 18, Urbana, Ill.

Josephus W. Hughes of Westwood, N. J., has been appointed Commercial Agent of the Hackensack Water Company, succeeding Walter H. Boquist, who was recently made Comptroller.

Mr. Hughes is completing his thirty-first year in the service of the Company. He joined the Weehawken staff of the Company in May,

(Continued on page 12)

Built to Serve Longer



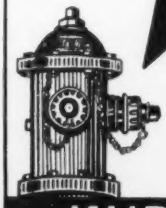
Every part of a Layne Well Water System will stand the heaviest duty; the hardest grind and longest non-stop runs. They are built to stand up—and give you far more than might be expected. Dollar for dollar they will pay greater dividends. Write for Catalogs, Folders and Bulletins. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.

LAYNE WELLS & PUMPS

CHECKS ON ALL POINTS

Complies with specification of the A.W.W.A.
Made in full range of sizes
Been time tested through fifty years of service

Send for specification sheets



JOHN C. KUPFERLE FOUNDRY CO.
ST. LOUIS, MO.

KUPFERLE FIRE HYDRANTS

Mobilizing Industry for Defense

Factories working three shifts—new plants being built almost overnight and general increased activity throughout the country, create many problems for Water Works Officials. Adequate fire protection must be maintained at all times. Nothing must interfere with continuous production, at the same time water works interests must be guarded. Experienced Water Works Officials will handle this new situation quickly and efficiently by the installation of

Hersey Detector Meters

On all fire services they know that these meters are accurate and absolutely dependable and are approved by the National Board of Fire Underwriters for their unrestricted delivery in case of fire. Hersey Detector Meters are safely guarding over a billion dollars worth of insured property.

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA
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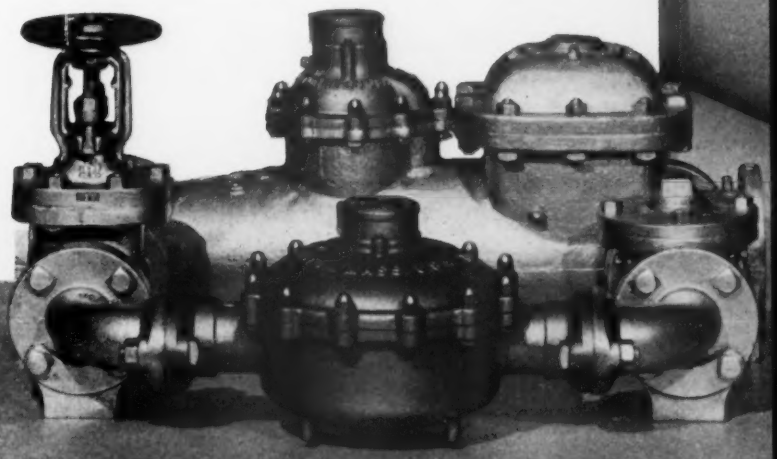

(*Continued from page 10*)

1910, as stenographer to the treasurer. Shortly afterwards he was placed in charge of the branch office collections, and in 1915 he became supervisor of the Westwood District. He has been supervisor of the Hackensack District Office since 1932.

Mr. Hughes will be succeeded at Hackensack by Thomas Adams, who now heads the Ridgefield Park Office of the company.

Wilford W. DeBerard resigned his editorial duties as Western Editor for Engineering News-Record on February 3 to accept an appointment as City Engineer of Chicago. Oscar Hewitt, Director of Public Works, announced the appointment and stated that Loran D. Gayton would assume the office of Assistant City Engineer, a position which has been vacant for several years.

Mr. DeBerard was born in Fairfax, Iowa, and attended Beloit College in Wisconsin and the Massachusetts Institute of Technology, graduating from the latter as Sanitary Engineer in 1901. His early experience included three years as Bacteriologist and Chemist for the Denver Union Water Company; conducting of experiments on filtration at Philadelphia,

(*Continued on page 14*)

CLEAN YOUR WATER MAINS

One does not have to be an expert mathematician to figure out that a clogged water main calls for a stronger pressure and that in turn calls for more coal—and literally burning up money. We can show you how to get dollar for dollar value out of every ton of coal. We can show you how to clean the water mains quickly and cheaply. Send us your address—that's all we ask of you.

National Water Main Cleaning Co.

30 Church St., New York, N. Y.

BRANCHES

115 Peterboro St., Boston, Mass.
910 William-Oliver Bldg., Atlanta, Ga.
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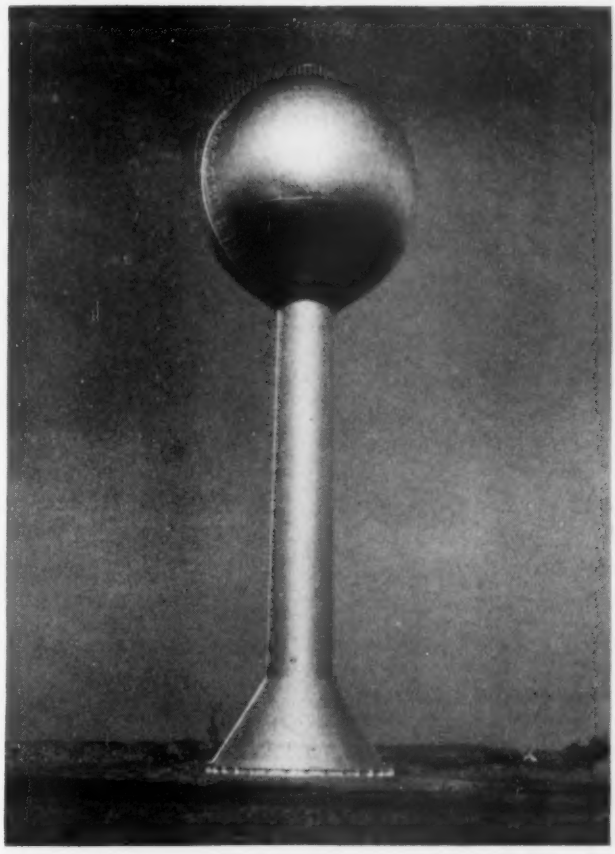
3812 Castellar St., Omaha, Neb.
2587 Glen Echo Drive, Columbus, Ohio
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Canada



250,000 GAL. STORAGE CAPACITY

. . . elevated 90 ft. above the ground is the specification that this elevated Watersphere fills at Shakopee, Minn. The sphere is supported by a tapered column, which in turn rests on a conical base. The entire structure is butt-welded.

Like all other elevated steel tanks, this new design supplies water by gravity pressure. Gravity flow insures a constant pressure in the mains and the supply of water from the tank is dependable since it flows automatically. Pumping costs are often reduced by the use of an elevated tank for, in a large distribution system, the pumps can be operated more uniformly and therefore more efficiently. In a small system they need be operated only periodically to keep the tank full. Write our nearest office for quotations.

CHICAGO BRIDGE & IRON COMPANY

Birmingham, Ala. Boston, Mass. Chicago, Ill. Cleveland, O. Dallas, Tex. Detroit, Mich. Houston, Tex. Los Angeles, Cal. New York, N. Y. Philadelphia, Pa. San Francisco, Cal. Tulsa, Okla.

(*Continued from page 12*)

Pa., and Oakland, Calif.; designing and constructing a filter plant at Harrisburg, Pa.; and designing the Columbus, Ohio, water and sewage treatment plants. He also served with the U. S. Reclamation Service and the Metropolitan Sewage Commission, New York.

From 1910 until the present time, Mr. DeBerard has been Western Editor for Engineering News-Record and its prececessor, Engineering Record, except in 1926–27 when he was Chief Engineer of the Regional Planning Association in Chicago. He also served for a brief period with the Sanitary District of Chicago, as a member of the Board of Review considering the lake level controversy.

Among the technical associations of which Mr. DeBerard is a member are A. W. W. A., A. S. C. E., A. A. E., Western Society of Engineers, and American Public Works Assn.

P. W. Frisk, formerly Manager of Chemical Laboratories of the American Enka Corp., Enka, N. C., is now in Brazil in the services of S/A Industrias Reunidas F. Matarazzo, Sao Paulo. Between studying Portuguese, two lessons per week, and making trips to the interior of Brazil

(*Continued on page 16*)

American Water Works Association
61st Annual Convention
Toronto, Canada—June 22-26, 1941

MAKE YOUR RESERVATIONS NOW
BY WRITING DIRECTLY TO TORONTO TO:

ROYAL YORK HOTEL

THE HEADQUARTERS HOTEL WHERE ALL
MEETINGS AND EXHIBITS WILL BE HELD.

All rooms have private bath, shower and radio loudspeaker. Separate bed for each person. Rates, fixed by the hotel management for the period of the convention, are:

Single room, per day	$ 4.00
Double room, per person, per day	3.50
Suite, per day	15.00 and up

MAKE RESERVATIONS NOW

HTH *Saves the Day!*

With Emergency Chlorination Job For Rochester, N. Y.

Street flushing tank preparing HTH solution to be injected into hydrants by auxiliary pumper.

Wm. H. Roberts, Commissioner of Public Works, Rochester, N. Y. writes—

"Following the accidental introduction of impure river water into our city drinking water mains on December 10th and 11th, we discovered the contamination was so widespread that regular chlorination at our reservoirs would take considerable time.

"We made direct injections of HTH solutions into the mains at many points of the City by using our regular equipment. Each crew consisted of a street flushing tank and an auxiliary pumper.

"Five pounds of HTH were added to each 2,500-gallon tank of water and pumped back into the mains through the fire hydrants.

"We believe this method of chlorination with HTH solutions enabled us to save two weeks time in purifying our drinking water system."

• River water (four million gallons of it!) accidentally enters the drinking water system at Rochester, N. Y. Liquid chlorine is added at the reservoirs but does not reach the dead ends of a drinking water system with 500 miles of mains. It is decided to use hypo-chlorination to speed up purification of the drinking water, and an emergency shipment of Sanitation HTH is rushed to the scene.

Flushing trucks of 2,500-gallon capacity speed to hydrants at strategic points in the city and auxiliary pumpers inject solutions of HTH into the hydrants. The solution is approximately 168 p.p.m. available chlorine. The operation is started about 4:30 P.M. December 15, and on the evening of the second day the drinking water is declared pure. Says Wm. H. Roberts, Commissioner of Public Works, Rochester—*"We believe this method of chlorination with HTH solutions enabled us to save two weeks time . . ."*

Once again—HTH saves the day—proves its value as a standby source of chlorine. Proves why hundreds of water works throughout the country rely on Sanitation HTH not only for quick, efficient service when emergencies arise but also for many everyday sanitation jobs. Be Prepared With Mathieson HTH. It contains 70% available chlorine, is quick acting, easily soluble, easily transported. Write or wire for full information and your nearest source of supply.

HTH comes in 5-lb. cans with replaceable caps, packed 9 cans to the case; also in 100-lb. drums.

THE Mathieson Alkali Works (INC)

60 EAST 42ND STREET, NEW YORK, N. Y.

LIQUID CHLORINE . . HTH . . SODA ASH . . CAUSTIC SODA . . BLEACHING POWDER . . BICARBONATE OF SODA . . AMMONIA, ANHYDROUS and AQUA . . . PH-PLUS (FUSED ALKALI) . . DRY ICE . . CARBONIC GAS

(*Continued from page 14*)

inspecting textile industries, Mr. Frisk writes, he has a busy appointment in S. A. Mr. Frisk is well known to American water works men, not only as an attendant at conventions and meetings but also as the A. W. W. A. Director from the North Carolina Section in 1938–40.

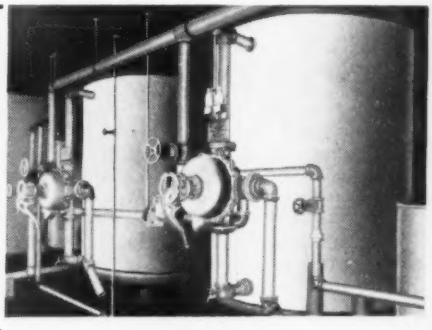
R. J. Smith is now in his forty-fourth year as Manager of the Water Works System of Perth, Ontario. Mr. Smith, who is Manager and Secretary-Treasurer of the Perth Public Utilities Commission, has been an Active Member of the A. W. W. A. for the past thirty years.

C. F. Hostrup of Santa Monica, Calif., has been placed in charge of water supply investigations and design of water works systems for national defense projects in the Los Angeles United States Engineer District. This district comprises the states of Utah and Arizona and southeastern Nevada and southern California.

Paul Hansen, of the consulting engineering firm of Greeley & Hansen in Chicago, has been placed in charge of matters pertaining to public health for the Illinois Emergency Defense Council.

(*Continued on page 18*)

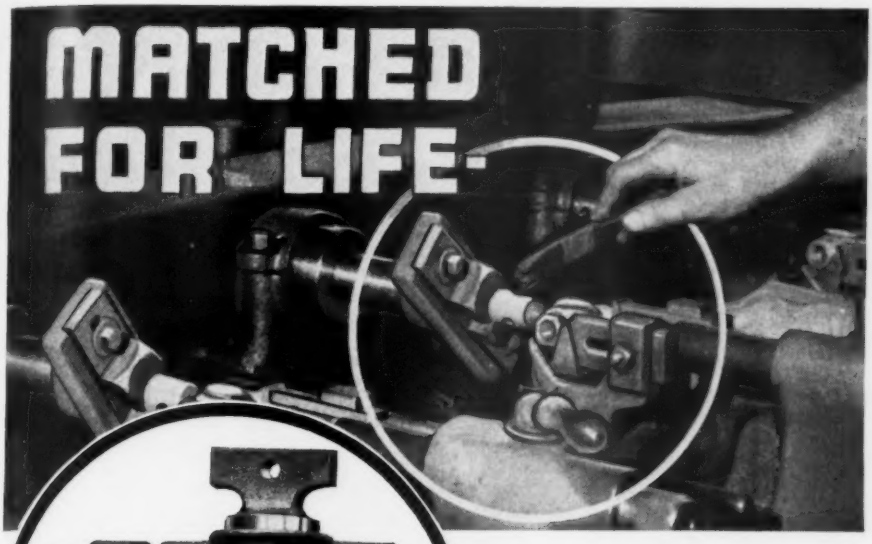
Your Community, Too, Can Enjoy Soft, IRON-FREE WATER

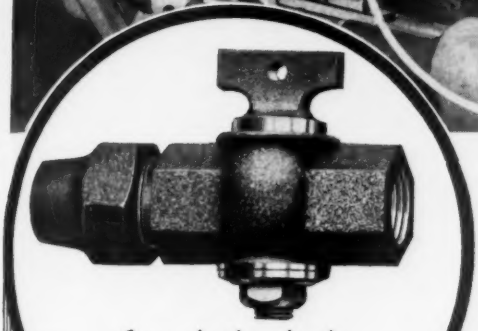


● Scores of cities and towns in the "hard-water belt" have solved their hardness, iron and manganese problems with Refinite Water Conditioning Equipment. Soft, iron-free water soon pays for itself in increased customers; eliminates sludge deposits in meters, mains and hydrants; stops formation of scale in water heaters and boilers.

Write today for Refinite's complete brochure on Water Conditioning Equipment for Municipalities. Overnight, your community can enjoy sparkling clear water, free from objectionable tastes and odors, free from corrosive tendencies. *Write us today!*

★ THE REFINITE CORP.
REFINITE BLDG. RIVAL OF THE CLOUDS OMAHA, NEBR.





One of Hundreds

Fig. 79C-R Newport Stop Copper to Female Iron Pipe

1. Hays builds a one-quality water works brass line from (85-5-5-5 Mix).
2. Hays tests every piece at 200 lbs. hydrostatic or more.
3. Hays Brass features full water-way.
4. Hays individually ground-in plugs are specially lubricated for easy turning.
5. Water Works Standard Threading permits use of Hays Brass in any standard tapping machine.
6. Hays builds a complete line.

GRINDING-IN

OUR camera caught Joe at one of the batteries of special Hays Grinding-in Machines. Joe smiled, "Why show this routine job in your advertisement—everybody knows that Hays grinds-in each plug with its own body?" ● "This is for new comers in the water works industry, Joe, not for you old timers. The routine things we take for granted all contribute to the high quality rating of Hays products in the field. Even the special long lasting lubricant used to insure easy working of Hays Ground-in Plugs is mighty important in the field to the hands that use them."

Write for the
Hays Catalog No. 5 and let Hays
prove its quality in your city.

COPPER • BRASS • LEAD • IRON

HAYS *Water Works* PRODUCTS

HAYS MFG. CO., ERIE, PA. • *Since 1869*

(*Continued from page 16*)

The annual Midwest Power Show will be held at the Palmer House, Chicago, on April 9 and 10, sponsored by the Illinois Institute of Technology in co-operation with seven nationally known midwest colleges and universities and seven chapters or sections of technical societies. The conference will emphasize aspects of national defense and include such important topics as central station practice, stationary prime movers, hydro-power, electric power transmission, industrial plants and feed water treatment.

"Engagements of Auditors for Governmental Bodies" is a statement recently published by the Special Committee on Governmental Accounting of the American Institute of Accountants. The statement points out the value of independent audits of the accounts of governmental units, shows that special qualifications and procedure are essential in public audits, and stresses the disadvantages of competitive bidding as a basis for the engagement of independent auditors. Copies may be obtained free of charge by writing: Frank A. Gale, Assistant Secretary, American Institute of Accountants, 13 East 41st St., New York, N. Y.

(*Continued on page 20*)

STRONG - TIGHT AND FLEXIBLE!

Regardless of where you lay cast iron water mains—under paved streets, railroads or over bridges—you can depend on HYDRO-TITE to make joints that are not only strong, tight and flexible but "lasting". HYDRO-TITE is easy to prepare and use. It has a record of over 25 years without a single failure anywhere.

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Main Sales Office: 50 Church Street, New York, N. Y.
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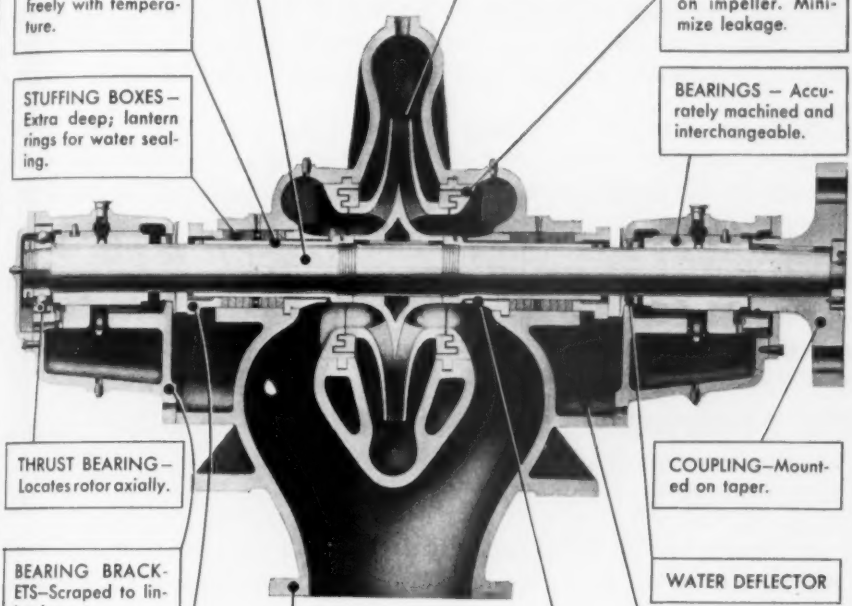
HYDRO-TITE

Reg. U. S. Pat. Off.

A Symbol of Quality

A DEPENDABLE SELF - CAULKING JOINT COMPOUND

Outstanding features of DE LAVAL PUMPS


SHAFT SLEEVES – Screwed on shaft abutting impeller to make a water-tight joint; can expand freely with temperature.
SHAFT – Hammer-forged steel, ground to limit gages.
BRONZE DOUBLE SUCTION IMPELLER –Finished on all surfaces.
LABYRINTH WEARING RINGS – Bronze, held in machined grooves in case and threaded on impeller. Minimize leakage.
STUFFING BOXES – Extra deep; lantern rings for water sealing.
BEARINGS – Accurately machined and interchangeable.
THRUST BEARING – Locates rotor axially.
COUPLING–Mounted on taper.
BEARING BRACKETS–Scraped to lining bars.
WATER DEFLECTOR
BRONZE GLANDS–Split horizontally.
PUMP CASE–Horizontally split, machined to limit gages.
PROTECTING BUSHING – Removable.
DRIP BOXES – Large and provided with drain openings.

Single stage and multistage pumps for all deliveries and all pressures.

Write for Catalog P-3219

DE LAVAL Steam Turbine Co.
TRENTON, N.J.
MANUFACTURERS OF TURBINES . . STEAM, HYDRAULIC, PUMPS . . CENTRIFUGAL, PROPELLER, ROTARY DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW, CLOGLESS, SELF-PRIMING, CENTRIFUGAL BLOWERS and COMPRESSORS; GEARS . . WORM, HELICAL and FLEXIBLE COUPLINGS

(*Continued from page 18*)

New Materials and Gadgets

1. A new paint for protecting metals under highly corrosive conditions has a synthetic base created from polyvinyl chloride which is derived from coke, limestone and salt. The new paint which may be either sprayed or brushed at ordinary temperatures is made only in semi-glossy black. It resists all acids except concentrated formic and acetic.

2. To protect workers against dust, there is now available a tough, lightweight paper mask designed to be washed or thrown away when dirty. It provides comfortable protection in dusty atmospheres where there are no toxic substances or silica. It is insoluble in live steam or boiling water.

3. To aid draftsmen in inking in lines, a device has now been made with two pieces of transparent plastic formed with the ruling edges far enough off the paper surface to prevent smearing. The ruling edges are designed to turn quickly as wanted.

4. Sprinkler fire protection by a fine spray is the result of new nozzles designed to give a spray or fog rather than a stream. The new nozzles are said to be effective in lessening water damage and in permitting the use of water where previously inadvisable.

5. A utility platform for attachment to poles, structural steel uprights or concrete columns has been made with a weight of less than 25 lb. and designed to support over 750 lb.

6. Special leather barrel cups and packings reported not to harden with age or dry up when idle are now available for pumps and compressors. The special treatment is reported to increase resistance to water, alkalies, solvents and petroleum products.

7. An electric eraser has been designed with a hollow shaft in which a 7-inch eraser is used, thus obviating frequent changing of erasers. A chuck at the paper end permits the cylinder of rubber to be fed out as it wears.

8. A new hand tool permits each bit to be placed in it at any one of three angles, thus allowing the user to work in ordinarily inaccessible or inconvenient places. The five bits for the tool handle are: screw driver, wood reamer, chisel, cutter and 6½-inch saw.

Readers can obtain further information by sending a postal to the A. W. W. A. headquarters giving the reference numbers of any of the above items and citing the March issue as the source.

(*Continued on page 22*)

WATER-BORNE
OUTBREAKS
in the
UNITED STATES
and
CANADA

1920–1936

by
Arthur E. Gorman
and
Abel Wolman

An unparalleled summary of studies concerning the relation of water supplies to typhoid fever, gastro-enteritis, etc.

A brochure that should be in the library of every sanitary engineer.

Price $1.00—postpaid if cash or check accompanies the order.

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WATER WORKS
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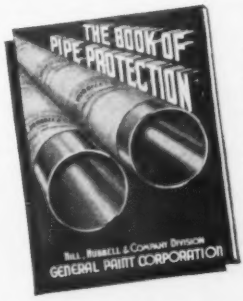
The HILL-HUBBELL "FACTORY PROCESS"
LINES, COATS-and-WRAPS
"Shatter-Proof"
STEEL PIPE
as it has NEVER been done before

The protective efficiency of the best coating material is measured by the THOROUGHNESS OF APPLICATION. The most expensive coating material won't protect STEEL PIPE unless it is PROPERLY APPLIED. Engineers seeking the best method say that the HILL-HUBBELL "factory process" of Lining, Coating-and-Wrapping STEEL PIPE—MECHANICALLY—INDOORS cannot be equalled by any other method. The cost is no higher when all items of expense are included.

MAKE YOUR PLANS TO ATTEND THE 61ST ANNUAL MEETING OF THE AMERICAN WATER WORKS ASSOCIATION, TORONTO, ONTARIO, CANADA, THE WEEK OF JUNE 22 TO 26TH, 1941.



The Book of PIPE PROTECTION describes in detail how "shatter-proof" STEEL PIPE is MECHANICALLY LINED and Coated-and-Wrapped at the Mills under ideal conditions. Use your letterhead and write for a copy.

GENERAL PAINT CORPORATION
HILL, HUBBELL & CO. • Division • Cleveland, Ohio
• EXPORT OFFICE: SAN FRANCISCO, CALIFORNIA, U. S. A. •

(*Continued from page 20*)

Organization of the Los Angeles Water Bureau has been changed by the establishment of several new divisions and realignment of duties in others, made effective on January 15 by H. A. Van Norman, Chief Engineer and General Manager.

The greatest change is the establishment of the new division called the Water Distribution System, with L. E. Goit as Engineer in Charge and E. W. Breitkreutz as Assistant. This new division is the result of the consolidation of the former Distribution Construction and Operation Division, Meter and Service Division, and San Fernando Valley Distribution Division. A centralized means for contact with the public is created through the new Water Dispatching Section which, under the immediate supervision of Milton Anderson, handles all matters pertaining to water storage, regulation of supply, complaints, etc.

C. J. Itter is Engineer in Charge, and Max K. Socha is Assistant, of the Design and Drafting Division, which is responsible for the coordination and supervision of the design of all water works structures. James E. Jones is Engineer in Charge and Leroy Henzie is Assistant of the Los Angeles Aqueduct Hydrographic Division, which has charge of all hydro-

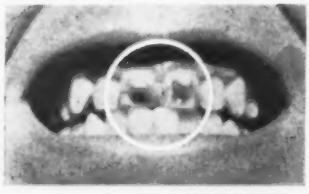
(*Continued on page 26*)

DON'T LET MOTTLED TEETH HANDICAP YOUR CHILDREN

DON'T LET children in your community become handicapped by mottled teeth caused by fluorine in the drinking water. Your water supply may be one of the many all over the country containing this dangerous element in quantities that will mottle or even completely destroy tooth enamel.

LIFETIME HANDICAP

Try to place yourself in the position of a young man or woman whose teeth are marred by ugly chalky, brown or even black patches. You would always be extremely conscious of such a disfiguration. It would be a constant handicap to both your social and professional advancement.



Typical case of mottled tooth enamel

But children in your community need not face such a handicap. How fluorine can be effectively and economically removed from water with Fluorex Purifiers is told in Bulletin 2500-A. Write for your copy.

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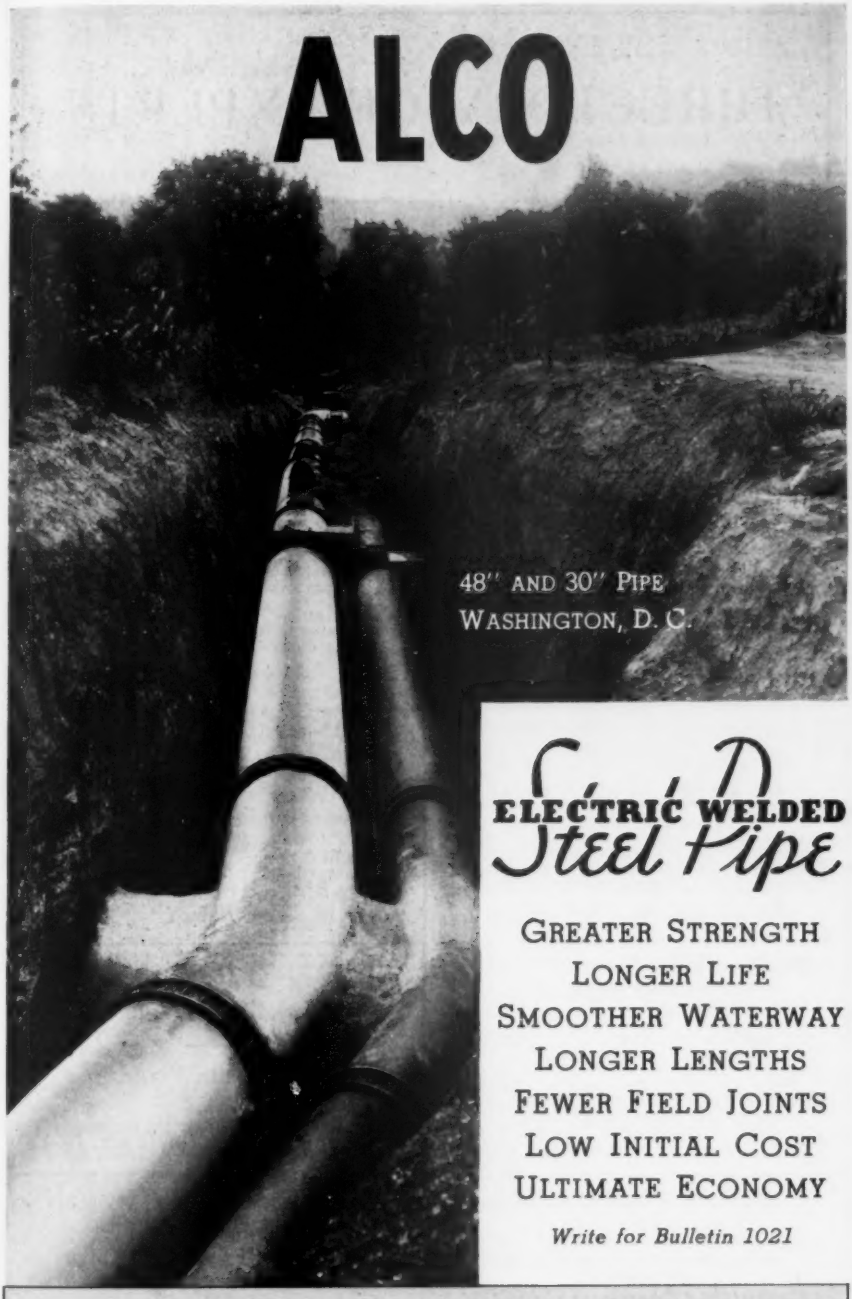

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(*Continued from page 22*)

graphic studies and investigations, water supply and storage, of the Los Angeles Aqueduct and the Mono Basin Extension. This division will cooperate with B. S. Grant, Engineer of the Los Angeles Aqueduct, on all matters pertaining to the operation of the Los Angeles Aqueduct and the Mono Basin Extension, with L. E. Goit, Engineer in Charge of the Water Distribution System, on all matters pertaining to water storage in the Upper and Lower San Fernando Reservoirs, and with T. R. Silvius, District Agent at Independence, respecting use of water for irrigation in Mono and Inyo Counties.

Other divisions and heads of them are: Field Engineering, R. R. Proctor, Engineer in Charge, and S. B. Nelson, Assistant; Pumping Plants and Reservoirs, S. M. Dunn, Engineer in Charge, and J. T. Whitestone, Assistant; Los Angeles Aqueduct, B. S. Grant, Engineer in Charge, and W. W. Wyckoff, Assistant; Sanitary Engineering, R. F. Goudey, Engineer in Charge, and R. L. Derby, Assistant; Major Construction, H. L. Jacques, Engineer in Charge; and Owens Valley-Mono Basin District, T. R. Silvius, District Agent.

These divisions are all directly under the jurisdiction of H. A. Van

(*Continued on page 28*)

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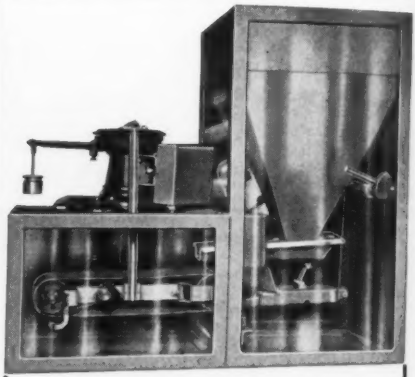

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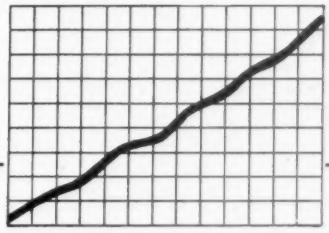

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(*Continued from page 26*)

Norman, and report to W. W. Hurlbut, Engineer of Water Works, or E. B. Mayer, his assistant. Also reporting directly to Mr. Hurlbut are the following functions of the Bureau which, not constituting major division, have been classified as sections: Budget, Statistical and Research, E. F. Dandridge in charge; Building Maintenance, E. L. Crocken in charge; Hydrologic and Engineering Investigations, D. A. Lane in charge; Land, E. A. Porter in charge; Personnel Co-ordination, A. I. Kelley, Co-ordinator; Special Engineering, E. A. Bayley and D. E. Rockfellow in charge; Specifications, E. Hubbard in charge; and Water Business, Thad M. Erwin in charge.

Managerial direction of joint divisions, including General Plant, Commercial, Purchasing, Legal and Personnel and Efficiency, has also been assigned to Mr. Van Norman by the Board of Water and Power Commissioners of Los Angeles.

The Executive Board of the American Public Health Association has announced the dates of the 70th Annual Meeting as October 14–17, 1941. The meeting place is Atlantic City, New Jersey. Headquarters for the

(*Continued on page 30*)

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(*Continued from page 28*)

meeting will be the Convention Hall. Residence headquarters will be the Hotel Traymore.

Get the Rope Boys! Customer (on phone): Will you please rush right out here? My water meter is running all over the basement, and I can't stop it!"—from Waterlite News, published by and for the employees of the City Water, Light and Power Department, Springfield, Ill.

The eleventh annual Arkansas Waterworks and Sewerage Conference will be held at the University of Arkansas, Fayetteville, Ark., April 14–16, according to Professor W. R. Spencer, Chairman of the Executive Committee.

A feature of the 1941 conference is the written examination for licensing operators. The 1940 conference authorized a voluntary licensing plan in which three classes of licenses would be issued. These require, in addition to the examination, some practical experience. Twenty-five operators have signified their intention of taking the examination which will be held in the morning session, April 14.

(*Continued on page 32*)

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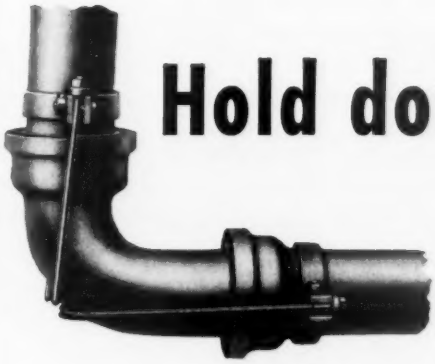

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SOCKET FITTINGS BY

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WHENEVER PIPING IS INVOLVED

(*Continued from page 30*)

The conference program will begin that afternoon with D. Y. McDowell, Malvern, Ark., presiding. The first session will include a report of district conferences held through the year under the direction of A. H. Ullrich, Fort Smith, Ark.

Topics to be discussed in the three-day conference are: Bacteriological Tests; Hydraulics; Activities of the State Board of Health; Construction of Wells; Operation Problems in the Use of Well Water; Iron Removal; Water Resources of Arkansas; Filter Plant Problems; Sanitation of Pipe Repairs; Charges for Fire Protection; and the Psychology of Public Relations.

The conference, which is held under the auspices of the General Extension Service of the University of Arkansas, is sponsored by the Departments of Chemical and Civil Engineering of the University College of Engineering, the State Board of Health, and the State Department of Trade and Industrial Education.

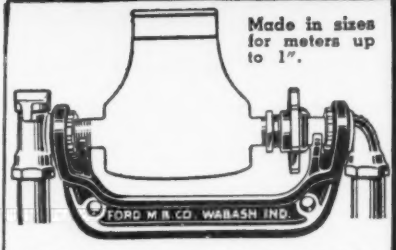
The federal government has issued a new specification for plumbing fixtures in recognition of the many new developments in the plumbing industry in recent years. The revised specification is incorporated in a

(*Continued on page 34*)

FORD YOKES

FOR RISER SETTINGS . . FOR ANGLE SETTINGS . . FOR LINE SETTING

MAKE EASY METER CHANGES



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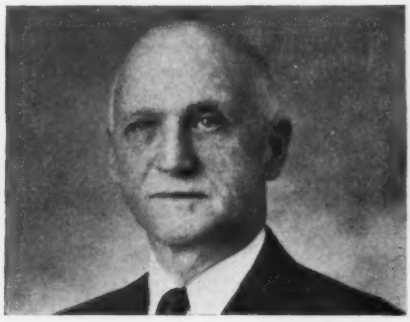
Corrosion-proof, tuberculation-proof, light in weight, easy to handle—all contribute to the continued efficiency and economy of "Century" Pipe. In addition, "Century" Flexible Couplings insure leak-proof lines that are permanent and trouble-free. Write for free catalogue, "Mains without Maintenance." Address Dept. 1017.

Note "Century" Tapped Coupling, identical with "Century" Flexible Couplings except that wider middle ring is bossed and tapped for service connections. Eliminates drilling and tapping in the field.



Mr. A. M. Munn, Town Engineer, who says—"Low first cost and low maintenance cost decided us on 'Century' Pipe. We were extremely gratified by the speed and economy with which the pipe was laid."

KEASBEY & MATTISON
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K&M best in asbestos

(*Continued from page 32*)

122-page booklet entitled "WW-P-541a Federal Specification for Plumbing Fixtures."

The new specification, which was approved on March 30, 1940, by the Director of Procurement, supersedes Federal Specification WW-P-541 adopted on August 1, 1933. While the new specification did not become effective until March 1, 1941, it was possible for branches of the Government to incorporate the new specification in bids of earlier dates.

Latest types of plumbing fixtures and fittings available are included in the new specification which has been broadened in order to be more in accordance with standard practices. Fixtures and fittings of the newest type are included in these specifications.

A new feature of the specification is the sections on air gap requirements and backflow preventers, including a section on inspection and tests. The new specification provides protection against back siphonage by establishing minimum air gaps for all supply fittings. These are based on actual tests conducted under varying conditions.

An air gap is defined as the vertical distance between the outlet or spout of an over-rim supply fitting and the flood level of the receptacle on which it is mounted. Air gap requirements for ordinary conditions and

(*Continued on page 36*)

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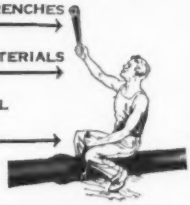
NO GASKETS. NO BELL HOLES TO DIG.



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(*Continued from page 34*)

for exceptional conditions such as the spout near the wall or the spout set at an angle are set forth in detail in a tabulation.

Backflow is defined as the flow of water into a water supply system through a supply outlet caused by gravity, vacuum or other pressure differential.

A backflow preventer is defined as a device for preventing backflow through a submerged or partially submerged supply outlet into a water supply system. Methods of testing backflow preventers are described in detail.

The new specification requires that all fixtures such as lavatory faucets, sink faucets, over-rim bathspouts, and drinking fountains have air gaps to prevent back siphonage. Flush valves on water closets and ball cocks in the low tanks must be equipped with vacuum breakers.

Other provisions in the new specification include sections pertaining to metal mixes and plating thicknesses. These have been changed to provide the most practical and serviceable brass plumbing fittings.

The latest commercial standards on sanitary cast-iron enameled ware and vitreous china plumbing fixtures are included. These standards provide protection for the government as well as the public generally by

(*Continued on page 38*)

Tentative Standard Specifications for Elevated Steel Water Tanks, Standpipes and Reservoirs

Another document for the betterment of water works practice. Produced jointly by the American Water Works Association and the American Welding Society.

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SOLVAY SALES CORPORATION

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40 RECTOR STREET NEW YORK, N. Y.

SOLVAY

LIQUID CHLORINE

(*Continued from page 36*)

definite and practical methods of sampling, inspections, and tests. Among the tests are the vitrification tests for vitreous china plumbing fixtures and various tests for acid-resisting cast-iron enameled ware.

All enameled iron plumbing fixtures are now specified in acid resisting enamel only.

One of the most comprehensive changes in the specification is in the recognition of new types of water closets. The specification now permits the use of siphon jet wall hung and blowout type wall hung closets on chair supports, also close-coupled siphon jet and reverse trap closets.

Closet seats for the water closets have been changed to include a number of new type seats.

The new type urinals added are the wall hung wash-out on chair support.

(*Continued on page 40*)

C. H. Christensen, Manager of the Missoula Division of the Montana Power Co., Missoula, Mont., died on January 25 in a Seattle hospital where he had gone after confinement in a Missoula hospital. Although he had been ill for several months, he had remained at his duties until early January. In his 50-year career in western Montana, he covered the electrical field from its beginning and was active in the water works field.

He was born in Broager, Schleswig, Denmark, and in 1891, at the age of 17, came to the United States. It is reported that after his voyage to this country he spent all his remaining money for a railway ticket "for as far west as it will take me." But it is said that he saw friends on the platform at Missoula and failed to use quite all his ticket. He had jobs as saw-mill hand, fireman and lamp trimmer, but much of his early work was wiring Missoula's major buildings. He designed and installed many of Missoula's early-day electric signs. In 1914 he became General Manager of the Missoula Light & Water Company, the Clark Missoula Power Company and the Missoula Street Railway.

In 1910, after a visit to the old country, he went to Hamilton, Mont., to take charge of the Bitter Root Valley electrical system then being reconstructed by the Missoula Light and Water Company. In 1916 he designed and put into effect one of the first promotional rates for residence electric service, a type of rate which has since been adopted by nearly every electric utility. When the various Missoula utilities were purchased by the Montana Power Company in 1929, Mr. Christensen was made Division Manager. He had been a member of the A. W. W. A. since 1919.

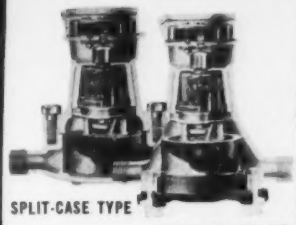
TRIDENT

Interchangeability MEANS *Reliability in Performance*

The SYMBOL of SUSTAINED ACCURACY

Number 3 of a Series

WHO EVER thought of bringing a 15 year old automobile up-to-date as far as reliability or any other feature was concerned? And yet that is what is being done successfully every day with Trident Meters, not only 15 years old, but twice that age! All because of Neptune Interchangeability, which permits you to use new up-to-date parts, with all modern improvements and refinements, in your oldest Trident Meter.



SPLIT-CASE TYPE

FROST-PROOF TYPE

TRIDENT INTERCHANGEABILITY

means

Economy in Inventory
Efficiency in Maintenance
★ Reliability in Performance
Assurance Against Replacements
Utmost in Revenue

NEPTUNE METER COMPANY · 50 West 50th Street, NEW YORK CITY

Branch Offices in CHICAGO, SAN FRANCISCO, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.

Neptune Meters, Ltd., 345 Sorauren Avenue, Toronto, Canada.

61ST ANNUAL MEETING AWWA JUNE 23-28 1941 ROYAL YORK HOTEL TORONTO CANADA

(*Continued from page 38*)

Drinking fountains have now been added to the specification. They are not listed in the old specification. Two types are permitted: the projecting wall hung and the recessed-in-wall type. Vitreous china or acid resisting enameled cast iron can be furnished.

A number of new design trimmings for lavatories, sinks, and bath combinations have been added to the specification. Supplies for lavatories and closet combinations can now be chromium plated copper tubing with soldered joints as can also iron pipe size supplies.

It is suggested that the adoption of the Federal Specification by those who write municipal and state codes will tend to provide greater uniformity of code requirements. Copies of the new specification may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 15 cents and all orders should be accompanied by money order or cash.

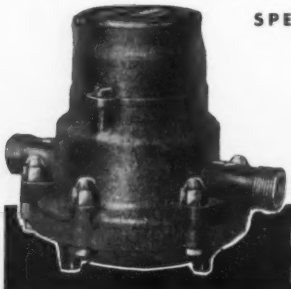
A valuable 72-page manual to have along with the above is Report BMS66, a recommended plumbing practice for federal agencies, which is for sale by the Superintendent of Documents, Washington, D. C., for 20 cents per copy.

The consolidation of their Moorestown, N. J., Experimental Station with their laboratory in the factory in Philadelphia, has been announced by

(*Continued on page 42*)

Mrs. Edward C. Trax died suddenly at home at McKeesport, Pa., on February 5. Mr. Trax is Chemist in charge of the filtration plant at McKeesport. He is a Director of the A. W. W. A. from the Western Pennsylvania Section and a Past-President of the Pennsylvania Water Works Operator's Assn. Both Mr. Trax and the late Mrs. Trax are well known in the water works field as regular attendants at water works meetings.

FIRST QUALITY METERS EXCLUSIVELY



SPECIFY *American* or *Niagara*
(BRONZE CASE) (IRON CASE)
Water Meters
WRITE FOR CATALOG

BUFFALO METER COMPANY
Established 1892 2914 Main St., Buffalo, N. Y.

1879—ROSS—1879

AUTOMATIC VALVES

ALTITUDE VALVE

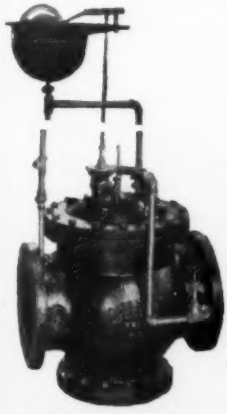
Controls elevation of water in tanks, basins and reservoirs

1. Single Acting
2. Double Acting

REDUCING VALVE

Maintains desired discharge pressure regardless of change in rate of flow

Regulates pressures in gravity and pump systems; between reservoirs and zones of different pressures, etc.



FLOAT VALVE

Maintains levels in tank, reservoir or basin

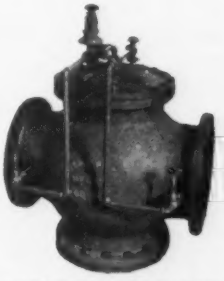
1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

A self contained unit, with three or more automatic controls

COMBINATION VALVE

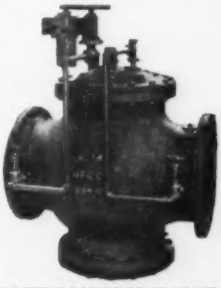
Combination automatic control both directions through the valve

Maintains safe operating pressures for conduits, distribution and pump discharge



SURGE-RELIEF VALVE

Electric remote control—solenoid or motor can be furnished



REMOTE CONTROL VALVE

Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Packing Replacements for all Ross Valves Through Top of Valve

ROSS VALVE MFG. CO., INC., P. O. BOX 593, TROY, N. Y.

(*Continued from page 40*)

Ozone Processes, Inc., manufacturers of large-capacity ozone generating equipment. A program of research on ozone generation and the application of ozone to water treatment and industrial chemical processes is being formulated under the direction of George A. Boyd, Director of Research. Bacteriological and chemical studies will be continued in the new location.

Ozone Processes recently installed their equipment in the filtration plants at Whiting, Ind., and Denver, Pa.

High capacity trickling filters are described in detail in Bulletin No. 329 recently made available by the Sanitation Division, Chain Belt Company, Milwaukee, Wis. Illustrations, flow diagrams and operating data are combined to describe fully the equipment and process.

A new streamlined operating table, recently placed on the market by the International Filter Co., is designed to provide fingertip control of large filter or softening plants. Described as the first major improvement in appearance since marble-topped tables were introduced 25 years

(*Continued on page 44*)

CUMULATIVE INDEX TO
THE JOURNAL AND PROCEEDINGS

1881–1939 Inclusive

The Cumulative Index to the Journal and Proceedings of the American Water Works Association is ready for its place on your shelves, where it will render your bound volumes of these publications far more useful for ready reference. After this edition was printed the type was torn down, and future indexes will commence with the issue of January, 1940. Get your copy *now.* Price to members, $1.75; to members for cash with order, $1.50; to non-members, $2.00. Write to—

The American Water Works Association
22 East 40th Street, New York

Another Reason for Rensselaer Quality

Making a Brinell hardness test of metal on a Tinius Olsen Testing Machine

Tests are made daily of all Iron and Bronze used in Rensselaer Valves, Hydrants and other Products, to maintain QUALITY of the highest standards.

Buy RENSSELAER for QUALITY

Make your plans to attend the 61st Annual Meeting of the American Water Works Association, Toronto, Ontario, Canada the week of June 22 to 26, 1941.

RENSSELAER VALVE CO.

TROY, N. Y.

(*Continued from page 42*)

ago, it is shipped complete with four-way hydraulic transfer switches mounted within the cabinet, thus very greatly reducing installation time. The table is built of welded furniture steel, shaped with rounded corners and trimmed with chromium-finished strips.

Pennsylvania Salt Mfg. Co. has just issued its Perchloron Data Book No. 2. The 32-page book describes Perchloron which is a calcium hypochlorite, the preparation of Perchloron solutions, and its use in water purification, for sewage treatment, for swimming pool sanitation, and as a bactericide in the food industry.

"Amercoat—Plastic Coatings" is a new catalog just issued by the American Concrete and Steel Pipe Company, Box 3428, Terminal Annex Post Office, Los Angeles. The 16-page booklet describes in detail and by picture Amercoat, a sprayable plastic coating which is reported as corrosion-proof and non-contaminating. It is designed for use on pipe and metal containers in various industries including petroleum and water works.

Standard for Main Lines for Nearly 50 Years
THE VENTURI METER
* VENTURI is the registered trade mark under which these famous main line meters are manufactured and sold . . . by
BUILDERS IRON FOUNDRY • PROVIDENCE RHODE ISLAND
WRITE FOR BULLETIN 293

News of the Field

Identification Cards for Public Service Employees

During the present defense emergency, many water department executives have sought methods for providing each employee with an identification card. This step is in line with the growing policy of allowing no person to enter a water supply or other utility plant unless he has a special pass or a regular identification card. For the administrative, clerical and service personnel, a celluloid or plastic card holder may be provided to hold a card 4 in. by $2\frac{1}{2}$ in. in size. These holders can be purchased from any concern engaged in the sale of convention badges. The ten-cent stores stock a card case or holder that closely approximates the above size and may be a simpler source for the material. In the card holder is placed an identification card which bears a photographic likeness of the employee.

There are two methods of producing the cards:

1. Employ a commercial photographer to take employees' photographs. This can be done in a lot basis at a cost of about $3 per hour. For an additional charge of about five cents per unit, a small photograph can be printed at the side of a card. After the card-photos are finished, they can be sent to a printer and text such as the following added:

Name of Water Company or Department
Employee's Identification Card
(*to be typed in later*)
Employee's Name
Title (*to be typed in later*)
Signed (*to be signed*)
Superintendent

As a variation, double weight Velox paper can be used and if the printer uses a special lamp to light his press, he can print the text on the cards first. They can then be used by the photographer as needed for the photographs of the employees.

On the reverse of the card, there can appear a specimen signature of the employee, with data concerning his height, weight, etc.

2. A second method involves the production of printed cards with text as follows:

(*Space for signature*)
This is to certify that the
signature above is that of
(*to be typed in later*)
who is employed in the position
of (*to be typed in later*)
by the (*Name of Utility*)
(*Signature*)
Superintendent

(*Continued on page 2*)

(*Continued from page 1*)

A small photo can then be pasted at the left side of the card. If there is a utility seal available, it can be impressed over the photograph and the following text printed on the card "Not valid without company (or department) seal over part of the photograph." LePage's liquid solder has been found useful for pasting photographs on the cards.

Sealed (perspiration-proof) badges or buttons can be made up for laborers. They can be purchased with safety clasps. The use of the photographs on laborers badges is as essential as it is on the cards for other employees.

This outline is based upon a report made by G. E. Lourie, Water Department Superintendent of Bristol, Conn., to the members of the Connecticut Water Works Association.

Mr. Superintendent! Do you have Commissioner-Trouble? If commissioners, councilmen, aldermen, trustees, or other well-meaning citizens seem to have trouble adjusting themselves to functioning in co-operation with the water works management, then perhaps the case history given below may be duplicated. For obvious reasons, parts from the letter describing one superintendent's experience are quoted anonymously:

"As you probably know, my department has for some months been operating under a new Council, and when they came in they apparently were going to make some cuts in the overhead and more particularly in what they thought I might be doing personally. Recent actions indicate that the Council may have changed its initial general plans and attitude.

"In this connection, I want to refer to the January, 1941, JOURNAL—because it had some bearing on the behavior of our Council. After reading the article on "Public Water Supply in the Civil Defense Program" I passed the JOURNAL on to one of our Councilmen who is head of our Home Defense Committee so that he might read that article and any others of interest and so that he might see what the A. W. W. A. JOURNAL can mean to a water works superintendent.

"He passed the JOURNAL along to other members of the Council who have commented on the article by Mr. Livermore. This article should be given to every new member of a Council or Board of Water Commissioners and if it would have the effect on them that it had on our Council it certainly would pay big dividends."

[*In view of this superintendent's very strong indorsement, the Association will gladly supply free of charge as many reprints of Mr. Livermore's paper as interested superintendents may need.*]

"The part of Mr. Livermore's paper which says 'He may come into office with a slightly exaggerated idea of his ability and importance,' applied to one of our Councilmen who commented upon it—and this is how it affected him: He was always running into the office and pestering the staff with

(*Continued on page 4*)

L. G. CARLTON

Superintendent, Municipal Water Works of Springfield, Massachusetts.

writes:

One of the supply mains of the City of Springfield is a cast iron line laid 45 years ago, consisting of 14,300 feet of 36″ and 14,300 feet of 30″ pipe. During the ten year period just closed there have been no breaks of any kind on this line. There have been, however, four leaking joints which cost a total of $183.90 to repair. This would show an average maintenance cost of $3.52 per mile per year, for the last ten years.

(*Signed*) *Leland G. Carlton*

LOW MAINTENANCE is an economy factor in cast iron pipe that is usual, rather than exceptional, in water works experience. An impartial survey among nearly 200 water works superintendents shows that the maintenance cost of cast iron pipe is far below that of any other pipe material which has been in use long enough for the recording of conclusive data.

CAST Q IRON

Look for the "Q-Check" Registered trade mark.
Cast iron pipe is made in diameters from 1 1/4 to 84 inches.

The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois

CAST IRON PIPE
PUBLIC TAX SAVER NO. 1

(*Continued from page 2*)

things which to us seemed pretty unimportant but to him, I suppose they seemed like real big issues. When I was away from the office for a few days, this Councilman had the staff in a state of panic, and I decided that thereafter I would just have to sit in the office as much as possible and keep things quieted down. That Councilman has recently commented two or three times on Mr. Livermore's article and laughed over some of the things that he was attempting to do. I think that in the future he will prove to be one of the best Councilmen we have ever had."

(*Continued on page 6*)

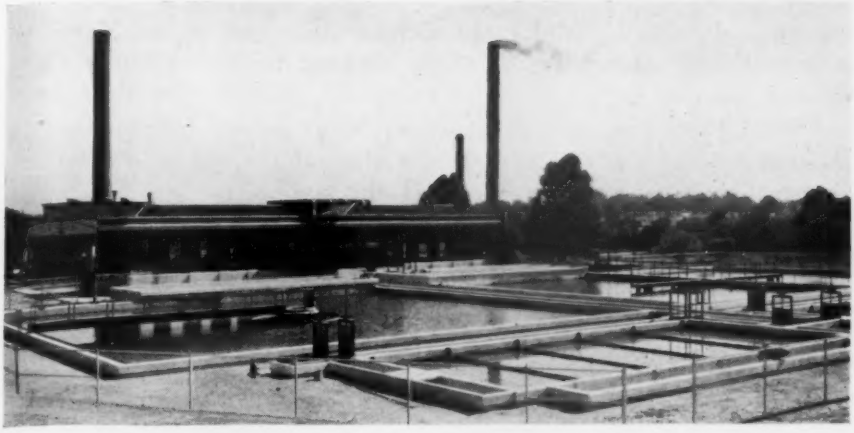
George Hall Hazlehurst, Chief Engineer and Director of the Bureau of Sanitation of the Alabama State Department of Public Health, died on March 7, at his home in Montgomery, Ala.

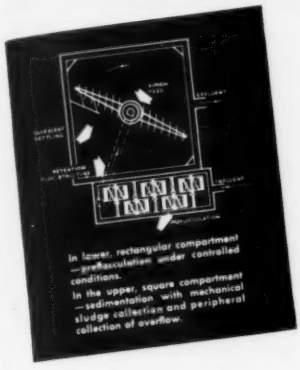
Mr. Hazlehurst was born in 1887 at Macon, Ga. He received his early education at Barton Academy in Mobile, Ala., and began his college training at Rensselaer Polytechnic Inst. from which he transferred to Georgia School of Technology; but after a short time he returned to Rensselaer which graduated him with the degree of Civil Engineer in 1910. He later attended Harvard Graduate School of Science which in 1913 awarded him the degree of Master of Civil Engineering.

Mr. Hazlehurst became affiliated with the State of Alabama on November 1, 1917, shortly after Dr. Samuel W. Welch became the State Health Officer. Prior to this he had been resident engineer on several large water plants, water distribution systems and sewer systems in this country. He had been on the staff of the American Water Softener Company in Philadelphia, Sanitary Engineer for the Atlantic Coast Line Railway, and he had also been associated with his father, J. N. Hazlehurst, in Atlanta, Ga. During the early part of the World War, he served as Sanitary Engineer with the Rockefeller Foundation in Serbia. His diversified training and experience equipped him well for the position of Chief Sanitary Engineer for Alabama and for the effective work he had carried out in getting Alabama communities to realize the responsibility of providing adequate sanitation for all inhabitants, regardless of their economic status. He was a leader in the field of malaria control throughout the whole South and had done much to improve the public's health through his pioneering in environmental sanitation.

He had been a member of the A.W.W.A. since 1914. He was also a member of the New England Water Works Assn., American Public Health Assn., National Malaria Com., Conference of State Sanitary Engineers, and the Board of Malaria Consultants of the Tennessee Valley Authority.

FLOC FORMATION AND RETENTION




In lower, rectangular compartment —preflocculation under controlled conditions.
In the upper, square compartment —sedimentation with mechanical sludge collection and peripheral collection of overflow.

KEY TO EFFECTIVE WATER PRETREATMENT

The Dorrco Squarex Clarifier (square tank) with built-in flocculation will remove in a single operation, the bulk of the suspended and precipitated solids—will deliver to the sand filter a uniform treated water with ideal filtering characteristics.

The secret lies in the retention of floc structure through the flocculation and sedimentation zones. Flocs are conveyed so slowly and quietly that the most fragile ones are not destroyed.

● *Bulletins on the Dorrco Squarex Clarifier and the Dorrco Clariflocculator are yours for the asking.*

CIRCULAR TANKS
If circular tanks are preferred the Dorrco Clariflocculator is recommended. Flocculation takes place in a central, circular compartment; sedimentation in an outer annular one.

The DORR COMPANY Inc.
ENGINEERS · 570 LEXINGTON AVE. · NEW YORK
ATLANTA TORONTO CHICAGO DENVER LOS ANGELES

(*Continued from page 4*)

A partial summary of the facilities needed for the nation's health, welfare and recreation program, being undertaken in connection with defense activities, has been made by Charles P. Taft, Assistant Co-ordinator of Health and Welfare and Related Defense Activities, in the March 11 issue of *Defense*, official bulletin of the National Defense Advisory Commission, from which the following is quoted:

"Water supply and sewage facilities.—Many defense communities are without public water and sewerage facilities, and where existent seldom exceed the normal requirements, Mr. Taft reported.

"It is believed that any considerable increase in existing facilities or installations of new facilities should, in most instances, be financed and constructed by the Federal Government. Reimbursement where claimed should be derived from operating revenues. Grants as such are not recommended, although in many cases the financial outlay by the Federal Government will in effect be a grant, since the facilities may not be necessary after termination of the present emergency.

"Where existing facilities of an established governmental unit are increased only slightly, this may be done through a loan and the operation

(*Continued on page 8*)

fight
CANCER
with
knowledge

Help the American Society for the Control of Cancer. Enlist in the Women's Field Army.

AMERICAN SOCIETY
for the
CONTROL OF CANCER
385 madison avenue • new york city

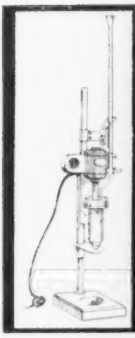
Filter Sand and Gravel

WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.

PROMPT SHIPMENT IN BULK OR BAGS OF 100 LBS EACH.

Inquiries Solicited.

Northern Gravel Co.
P. O. Box 307, Muscatine, Iowa



The Langelier Motorized Water Hardness Apparatus

For the rapid and convenient determination of Calcium and Magnesium separately or in combination.

Write for descriptive folder

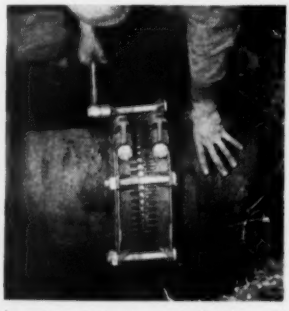
Chemlab Specialties Co.
52 Alvarado Rd., Berkeley, Cal.

STANDARD OF THE INDUSTRY

For Dependable Repair of Broken Mains

Clean pipe, center brass band over break, soap gasket and pipe.

Center gasket and Monel band over brass band, assemble halves of clamp and bolt together.



Insert pull bolts and tighten all around evenly.

● **THE SKINNER-SEAL SPLIT COUPLING CLAMP**—the original coupling clamp for broken mains—is standard with most water companies because of its sealed gasket—sealed at the top with Monel Metal band, at the sides with hard vulcanized tips. These clamps are tough—built to outlast the main, tested to 800 pounds pressure. Gas rots rubber that can expand—but the SKINNER-SEAL gasket is completely sealed to positively prevent cold-flow or swelling. Write for new forty-page Catalog No. 41.

M. B. SKINNER CO., SOUTH BEND, IND.

(*Continued from page 6*)

can be undertaken by the municipality or district owning such existing facilities without further outlay or responsibility by the Federal Government.

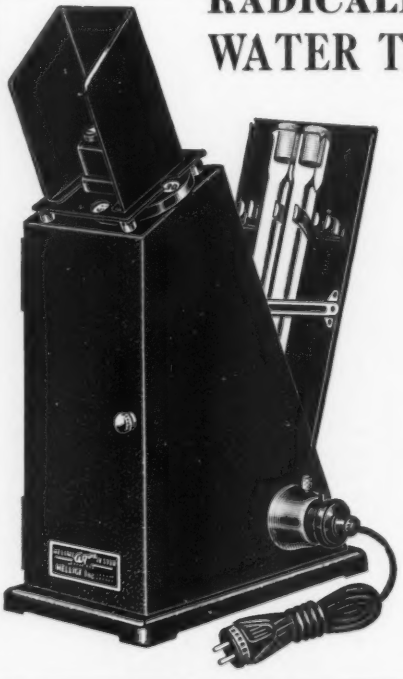
"New installations may require operation by the Federal Government until the emergency has passed or the community has become a legal entity and can take over the operation. Revenues from any individual installation should be available for its maintenance and operation as is the usual procedure with self-sustaining facilities.

"It is probable that where facilities are greatly increased or newly installed, some financial assistance from the Federal Government toward maintenance and operation will be necessary for a short period of time.

"Of the estimated increase of 1,500,000 in population in the areas under consideration, 1,125,000 will require public water supply and sewage services."

E. B. Black, senior member of Black & Veatch, Consulting Engineers of Kansas City, Mo., has been appointed to head the water engineering branch of the Quartermaster Corps of the U. S. Army. Under Mr. Black's

(*Continued on page 11*)



RADICALLY IMPROVED
WATER TEST COMPARATOR

The new Hellige Aqua Tester combines the thoroughly demonstrated advantages of Hellige *nonfading glass color standards* with radical improvements in design. This new model is, we believe, the most advanced type ever brought on the market and demands special consideration as it brings to its user the utmost in permanent reliability, accuracy, convenience and, last but not least, economy. Standards for all popular A. P. H. A. and A. W. W. A. Methods and Hydrogen Ion Control are available.

Write for Bulletin No. 602.

HELLIGE
INCORPORATED
3718 NORTHERN BLVD. LONG ISLAND CITY, N.Y.

"TAFFY" TROUBLE?

℞ Penn Salt
Liquid Chlorine

"TAFFY," "chlorine gum," "chlorine butter," and "goo" are a few of the names given this sticky mess which at times clogs up the gas passages and orifices of chlorinators.

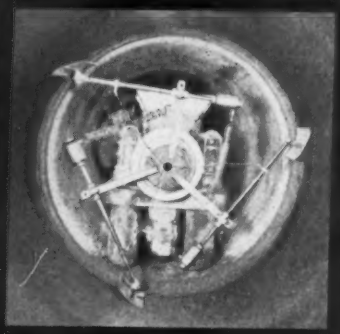
You can cure your taffy troubles by using taffy-free chlorine and tightening up chlorinator maintenance to exclude moisture, lubricants, bits of packing, and other foreign matter from the chlorine lines and chambers. Specify Penn Salt Liquid Chlorine made in our special fractionating column which produces gum-free liquid chlorine.

You receive Penn Salt Liquid Chlorine in double-checked cylinders which have been carefully cleaned, fitted with new or reconditioned valves, and twice inspected against leaks.

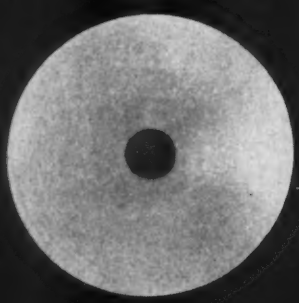
Write us for your free copy of the wall display card, "Handling Liquid Chlorine"—useful information to hang up near your chlorinator. Pennsylvania Salt Manufacturing Co., Widener Bldg., Philadelphia, Pa.—New York • Chicago • St. Louis • Pittsburgh • Tacoma • Wyandotte.

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals

Now— An Efficient and Economical Method of applying a Cement Lining to old water mains in place!



CENTRILINING 36" diameter pipe.



Cement lining in place. CENTRILINING is used to line new mains as well as to recondition old ones.

CENTRILINING is a simple—and certain—method of permanently increasing the carrying capacity of your water mains without resorting to constant cleaning—and without making major expenditures for new mains.

CENTRILINING consists of thoroughly cleaning the main *once*, and then applying by centrifugal force a dense lining of cement mortar, immediately troweled mechanically to a smooth finish. The resulting surface not only has an exceptionally high carrying capacity, but exceptionally long life.

This process is not untried, for many cities including Newark, N. J., Jersey City, N. J., Cincinnati, Ohio, Boston, Mass. and Akron, Ohio have already restored the carrying capacity of old mains by the CENTRILINE PROCESS. In one city, where tests have been made, it was found that the coefficient "C" (Williams-Hazen) was raised 77% by the CENTRILINE PROCESS.

Further details of this process will be sent upon request.

Centriline Corporation

140 Cedar Street New York, N. Y.

(*Continued from page 8*)

direction will be the water supply systems for all projects constructed by the Quartermaster Corps. Mr. Black, who was graduated from the University of Kansas in civil engineering, served during the World War as a captain and major in the air service, aircraft production of the U. S. Army. He also served as Chief Engineer for the War Credit Board, Engineer of Section B, Construction Division of the Army, and directed construction of cantonments.

Ray E. Lawrence, also of the firm of Black & Veatch, is Mr. Black's Executive Assistant. Mr. Lawrence was formerly Kansas State Director of the P.W.A., an engineer for the Kansas State Board of Health and Assistant Professor of Civil Engineering of the University of Kansas.

"Occupational Deferments and Defense Production," an address by Maj. Joseph F. Battley, Occupational Advisor, National Headquarters Selective Service, is the source of these extracts:

"In the World War, according to figures published by Secretary of War Baker, for every 13 men in the armed forces there were 87 workers producing the things needed to maintain those forces and the civil needs of the nation.

(*Continued on page 12*)

STOP RUST
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RUSTOP

Cathodic Protection ends rust
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Cleans old tanks
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Keeps new tanks clean
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No paint—No taste
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99 Per Cent Pure Silica
Washed, dried and manufactured to your specifications
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Ask for Literature
PEERLESS PUMP DIV. - *Food Machinery Corp.*
Factories: Los Angeles, San Jose, Fresno, Calif., Canton, Ohio

(*Continued from page 11*)

"Today, with the tremendous increase in the mechanization of war and the consequent shift of importance from military manpower to military materiel, that ratio is greatly increased.

"Both factors in that ratio are essential to national defense—trained workers and trained fighters. But the balance must properly be maintained or that perfect coordination between the component parts of the nation-armed-for-defense will be so thrown out of balance as to imperil that defense.

"It is the purpose of Selective Service—as its name implies—to preserve that balance. To select those best fitted to maintain the armed forces by continuing to perform their civilian tasks and to select those who are best fitted for military training.

"This does not mean that all the skilled should remain in civil life nor that all the unskilled should go for military training and service. It does mean that the productive skilled not required by the Armed Forces should remain at their jobs of making those things urgently needed in tremendous quantities. The army of today requires a high degree of skill, intelligence and initiative from the individual soldier—a great number of whom must

(*Continued on page 14*)

STRONG - TIGHT AND FLEXIBLE!

Regardless of where you lay cast iron water mains —under paved streets, railroads or over bridges— you can depend on HYDRO-TITE to make joints that are not only strong, tight and flexible but "lasting". HYDRO-TITE is easy to prepare and use. It has a record of over 25 years without a single failure anywhere.

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It is permanently sound and watertight, unaffected by frost action or ground movement, cannot crack, and is the lowest-cost type of construction for reserve water storage.

An experienced P·DM Engineer will be glad to consult with you on your own locality's requirements, and explain in detail the benefits of P·DM design, fabrication and erection, plus one contract—one responsibility—and a complete guarantee of satisfaction! Write today.

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(Continued from page 12)

be highly trained specialists in the complex machines of modern war. But in order to equip and train that army we must have these machines. This means that at this moment the stress is and must be on production. It must have priority over anything that may tend to interfere with it in any way.

"This is not a novel problem. We have been all over this same ground before—in 1917 and 1918. We must not forget the bitter lessons of those years.

"The Selective Service Act is administered under Presidential Rules and Regulations which amply provide for such priority to be given to defense production manpower as the national interest requires. It was this consideration, above all others, which moved the Congress to adopt a Selective Service rather than a universal military training program. This priority is accomplished by the device of the "occupational deferment"—Class II. The determination of whether or not a man should be placed in Class II must be made by the local board in each individual case on its own merits. There are no group or class deferments.

(Continued on page 16)

American Water Works Association
61st Annual Convention
Toronto, Canada—June 22-26, 1941

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THE HEADQUARTERS HOTEL WHERE ALL
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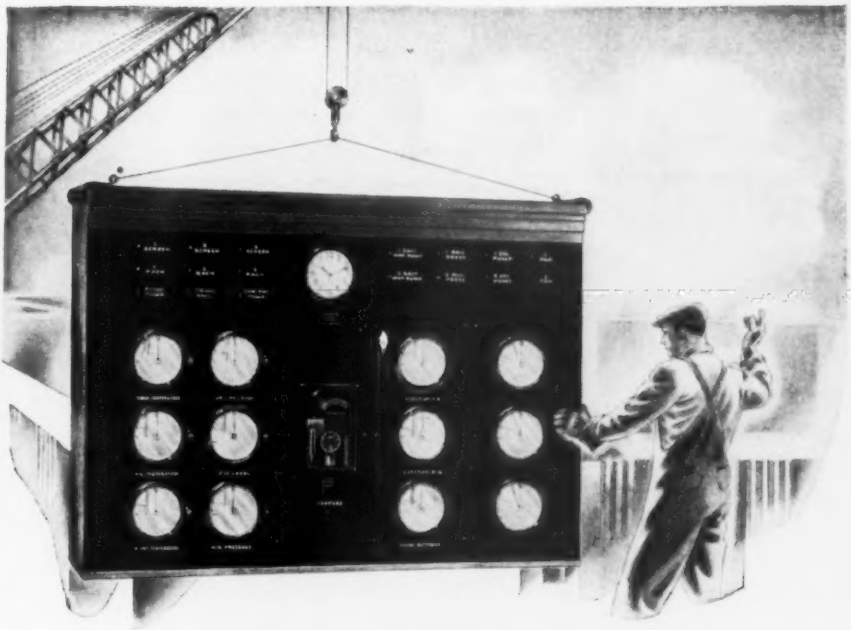


Here's the CORNERSTONE For Efficient Public Works Design . . .

Among the new water works and sewage plants that stand out as models of advanced efficiency, a growing number owe their leadership largely to a progressive principle in designing. Like efficient process plants in commercial industries, they are laid out from their very inception on a basis of complete, centralized instrumentation by Foxboro.

Many public works engineers now consult Foxboro before the plans are on the boards. Foxboro engineers were earliest pioneers of modern process control instruments . . . the originators of many important types, such as flow controllers, recording controllers and throttling controllers with automatic reset. Through long experience in instrumenting processes in industry as well as public works, they are uniquely equipped to help you.

Write for Foxboro Instrumentation Bulletins 232, on sewage plants, and 233, on water works. **The Foxboro Company, 150 Neponset Ave., Foxboro, Mass., U. S. A.** Branches in principal cities of the United States and Canada.

FOXBORO
REG. U. S. PAT. OFF.
Instrumentation
FOR WATER WORKS AND SEWERAGE SYSTEMS

(*Continued from page 14*)

"But, in the light of the clear Presidential mandate of paramount priority to defense production, we must keep constantly in mind Paragraph 352 of the Regulations which govern local boards:

" '*In determining whether a registrant is a 'necessary man,' the local board shall give due consideration to those registrants engaged in any activity which is essential to the national health, safety, or interest in the sense that a serious interruption or delay in such activity is likely to impede the national defense program.*'

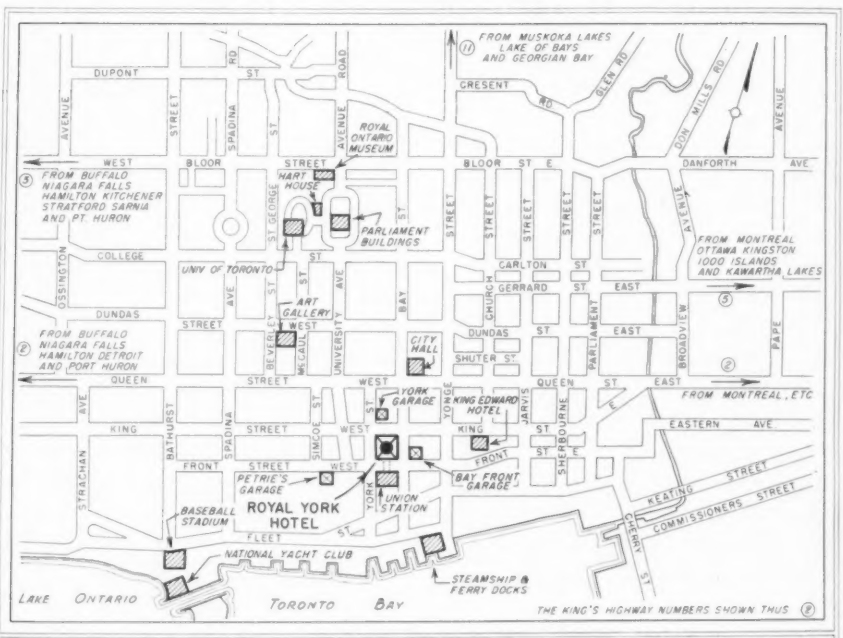
"The mandate of priority is clear.

"The machinery by which that priority may be effected is already set up within the Selective Service System. It is up to the local boards.

"Selective Service, by a careful consideration of each claim for occupational deferment and by giving due weight to the clear need for an uninterrupted expansion of our production program, can insure the continuing services of the necessary workers in that program without impairing the military training effort."

The City of Philadelphia plans to use some of the City's surplus funds to begin construction in mid-April on its $18,000,000 program to modernize

(*Continued on page 18*)



TORONTO, CANADA
SITE OF
AMERICAN WATER WORKS ASSOCIATION CONVENTION
JUNE 22-26, 1941

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HAIR-TRIGGER ACCURACY NOT NEEDED WITH

Ozonation!

The natural water purification process in high gear.

Ozone is activated oxygen—no more, no less. It oxidizes—that is, purifies—without the need to introduce distasteful and odor-producing chemicals into water. Too little or too much only effect the end results. There is no added taste or odor either way. Of course, the proper "ozone demand" is ideal, but in practice hair-trigger accuracy due to varying conditions is not so easy. The practicability of ozonation, therefore, makes it the simplest modern taste and odor remover available.

DEPENDABLE OZONE EQUIPMENT

Ozone Processes, Incorporated, specializes in the design, production and installation of large capacity ozone generating and distributing equipment readily adaptable to American water works practice. The equipment is ruggedly built for operating endurance, and scientifically designed to generate ozone with a low energy consumption previously unavailable.

Ozone Processes, Incorporated, is an organization of water treatment specialists—chemists, bacteriologists and engineers—who have explored the potentialities of ozone in the water treatment field, and whose combined experience is available where greater palatability is a major operating problem.

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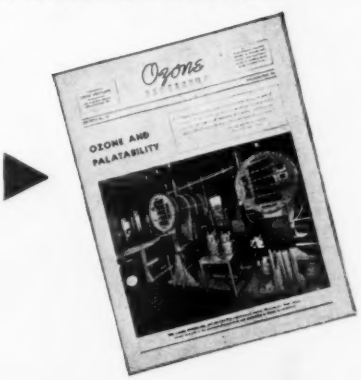
Ozone Processes, Incorporated, is an operating member of a well-established and soundly financed group, which has been serving American industry for over 60 years. The management is experienced and keenly aware of its responsibility to the Water Works Industry. This explains the thorough research and skilled engineering supporting every move we make in this field.



WRITE today for your copy of Bulletin No. 103. It tells simply and concisely the story of "Ozone and Palatability."

(*Continued from page 16*)

its water works. A bond issue for $6,000,000 will probably be floated late in May as a part of the total authorized plan.

New defense plants in Detroit have required numerous new water mains, chiefly 12,000 ft. of 42-inch main to serve the Ford and Packard aircraft engine factories; and 20,000 ft. of 24-inch mains and 5,000 ft. of 16-inch mains to serve for the most part the new Chrysler tank plant. Besides the approximately seven miles of new mains for defense factories, Laurence G. Lenhardt, General Manager of the Dept. of Water Supply, has under his supervision several major improvements to the system including the installation by W.P.A. of 6,000 ft. of 8-, 10- and 12-inch mains to improve fire protection at the Packard auto plant. The new mains for the defense plants are being constructed under contract.

Ray Coffey, Superintendent of the Hastings, Neb., municipal light and water plant, and former Assistant City Engineer at Hastings, has resigned to become Superintendent of the new plant at Provo, Utah.

(*Continued on page 20*)

For Underground Service Lines

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IN CASE OF FIRE

HTH *Saves the Day!*

With Emergency Chlorination Job For Rochester, N. Y.

Street flushing tank preparing HTH solution to be injected into hydrants by auxiliary pumper.

Wm. H. Roberts, Commissioner of Public Works, Rochester, N. Y. writes—

"Following the accidental introduction of impure river water into our city drinking water mains on December 10th and 11th, we discovered the contamination was so widespread that regular chlorination at our reservoirs would take considerable time.

"We made direct injections of HTH solutions into the mains at many points of the City by using our regular equipment. Each crew consisted of a street flushing tank and an auxiliary pumper.

"Five pounds of HTH were added to each 2,500-gallon tank of water and pumped back into the mains through the fire hydrants.

"We believe this method of chlorination with HTH solutions enabled us to save two weeks time in purifying our drinking water system."

• River water (four million gallons of it!) accidentally enters the drinking water system at Rochester, N. Y. Liquid chlorine is added at the reservoirs but does not reach the dead ends of a drinking water system with 500 miles of mains. It is decided to use hypo-chlorination to speed up purification of the drinking water, and an emergency shipment of Sanitation HTH is rushed to the scene.

Flushing trucks of 2,500-gallon capacity speed to hydrants at strategic points in the city and auxiliary pumpers inject solutions of HTH into the hydrants. The solution is approximately 168 p.p.m. available chlorine. The operation is started about 4:30 P.M. December 15, and on the evening of the second day the drinking water is declared pure. Says Wm. H. Roberts, Commissioner of Public Works, Rochester—"*We believe this method of chlorination with HTH solutions enabled us to save two weeks time . . .*"

Once again—HTH saves the day—proves its value as a standby source of chlorine. Proves why hundreds of water works throughout the country rely on Sanitation HTH not only for quick, efficient service when emergencies arise but also for many everyday sanitation jobs. Be Prepared With Mathieson HTH. It contains 70% available chlorine, is quick acting, easily soluble, easily transported. Write or wire for full information and your nearest source of supply.

HTH comes in 5-lb. cans with replaceable caps, packed 9 cans to the case; also in 100-lb. drums.

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(*Continued from page 18*)

W. W. DeBerard, City Engineer of Chicago, has obtained authority from Chicago's Council to engage Louis R. Howson and Paul Hansen, both consulting engineers of Chicago, to advise on plans to complete the South Side Water Filtration Plant, the substructure of which is now nearly done. The city engineering department has worked out general plans for the structure and equipment which must now be elaborated in detail.

Whether quality of a municipal water supply and flower show prizes have a direct relationship is not quite clear; but this much is: Mrs. S. F. Newkirk is a perennial winner at flower shows and Mr. Newkirk is Engineer and Superintendent at Elizabeth, N. J. Mrs. Newkirk's latest flower arrangement was a winner at the International Flower Show and was displayed later in the window of Marcus & Co., jewelers at 679 Fifth Avenue, New York.

Before the House of Representatives has been placed an extreme stream pollution control bill by Representative Karl Mundt. The proposed bill declares it a public nuisance to discharge into navigable waters and tributaries any waste which is "injurious to human health or to any form of life,

(*Continued on page 22*)

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RAILROAD—MUNICIPAL—HOUSEHOLD

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SOFTENING SYSTEMS
All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda
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Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter
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AERATORS · DE-GASIFIERS
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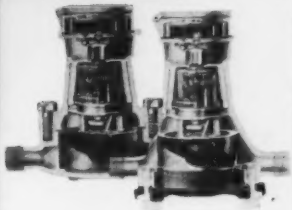

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● Trident Interchangeability is what does it . . . for every new and improved Trident Meter part is made to fit perfectly into every standard Trident Meter, no matter how old! When you buy Tridents, you get a fountain of youth in meter performance . . . a service to keep your meters young.

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(*Continued from page 20*)

including aquatic life, or migratory birds." Two years would be allowed for present polluters to meet the standards to be established by a proposed new division of the U. S. Public Health Service. This division could extend the time limit for polluters by five years, and then five years more if the polluter had made a sincere effort to eliminate the pollution. A milder bill, without the mandatory features, was passed by the Senate of the last Congress, but it died in conference after Representative Mundt succeeded in getting the House to pass his drastic version.

Harry M. Huy, for the past eight years Assistant to Thomas H. Wiggin, Consulting Engineer, New York, is now Hydraulic Engineer for the Western New York Water Company, Buffalo, N. Y. This is a continuation for Mr. Huy in the employment of the Federal Water Service Corp. and affiliates. This employment has extended over the last fourteen years in various capacities as an Engineer with Federal Water Service Corp., Public Works Engineering Corp., Trojan Engineering Corp., Utility Service Staff Corp., and, including the time mentioned above with Mr. Wiggin, has been spent in the operation of plants and in new construction.

(*Continued on page 26*)

CLEAN YOUR WATER MAINS

One does not have to be an expert mathematician to figure out that a clogged water main calls for a stronger pressure and that in turn calls for more coal—and literally burning up money. We can show you how to get dollar for dollar value out of every ton of coal. We can show you how to clean the water mains quickly and cheaply. Send us your address—that's all we ask of you.

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Lake Michigan is virtually an inexhaustible source of reasonably pure water . . . but frequent storms stir up sediment and make the water unsightly. Conversely, calm weather and bright sunlight stimulate the growth of various micro-organisms, some of which clog filter surfaces, while others impart disagreeable tastes and odors to the water. *For more than ten years, Glencoe has successfully overcome these problems with the aid of General Chemical Company water treatment chemicals.*

General Chemical Aluminum Sulfate coagulates and settles out turbidity and suspended micro-organisms. Subsequent super-chlorination in the mixing basin removes residual tastes and odors, keeps the filter sands sweet and clean.

General Chemical Anhydrous Bisulfite of Soda (A.B.S.) removes excess chlorine in the filtered water. At Glencoe this is applied as a solution—in the proportion of 1.6 parts of A.B.S. to 1.0 part of residual chlorine. (General Chemical A.B.S. is a dry powdered material which can be dry or solution fed, as desired.)

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(*Continued from page 22*)

Fire Defense is a 222-page book in six parts recently published by the National Fire Protection Assn. The book contains detailed and well illustrated expositions on: Fire From the Air; Sabotage; Organization for Civilian Defense; Fire Departments and Fire Fighting; Communications; Defense Production; and a Selected Bibliography. Copies are available at $1.50 per copy postpaid from: National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

The organization, good will and assets of the National Meter Company have been acquired by the Pittsburgh Equitable Meter Co. which has announced the establishment of the National Meter Division. Thus will be brought together under one management the facilities of two of the country's oldest meter manufacturers—the National Meter Co. has been an Associate Member of the A. W. W. A. since March, 1882; and the Pittsburgh Equitable Meter Co., since June, 1898.

Both President W. F. Rockwell of the Pittsburgh Company and President N. J. Kenny of National Meter have emphasized the completeness of the line of meters which this purchase makes possible. There will be

(*Continued on page 28*)

CUMULATIVE INDEX TO
THE JOURNAL AND PROCEEDINGS

1881–1939 Inclusive

The Cumulative Index to the Journal and Proceedings of the American Water Works Association is ready for its place on your shelves, where it will render your bound volumes of these publications far more useful for ready reference. After this edition was printed the type was torn down, and future indexes will commence with the issue of January, 1940. Get your copy *now.* Price to members, $1.75; to members for cash with order, $1.50; to non-members, $2.00. Write to—

The American Water Works Association
22 East 40th Street, New York

1 The trench, partially backfilled, is shown winding its curvy, uphill way. "Century" Pipe and Couplings permitted laying this line without using a single bend.

STRAIGHT LENGTHS OF K&M "Century" PIPE INSTALLED IN UPHILL "S" CURVE

WHEN the Sinking Spring Water Co. recently extended its pressure lines to serve a new housing development, Keasbey & Mattison "Century" Asbestos-Cement Pipe was used. The right of way made it necessary to curve one of the lines from left to right, then left again, on an uphill slope.

This neat job of pipe laying was done without the use of a single elbow or bend! "Century" Pipe and "Century" Flexible Couplings made this possible.

"Century" Pipe and Couplings make a permanently leak-proof line. It never tuberculates or corrodes. Quickly and economically laid because of the light weight of the pipe and the ease of installing the couplings. Its lastingly smooth interior keeps down pumping cost. Write Dept. 1017 for free catalogue, "Mains without Maintenance."

2 "Century" Pipe may be coupled either in the trench or on top—as local conditions dictate. Light weight and handling ease make "Century" Pipe quick and economical to lay.

3 Mr. Richard K. Keiser, General Manager of the Sinking Spring Water Co., who says: "The low cost of laying 'Century' Pipe was proven to us by our installation of 600 feet of 6" pipe in 30 man-hours at a laying cost of only 2½ cents per foot."

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

(*Continued from page 26*)

available nine different types of meters made by both companies, there being no overlapping between the Pittsburgh products and those of National because of structural differences and design features.

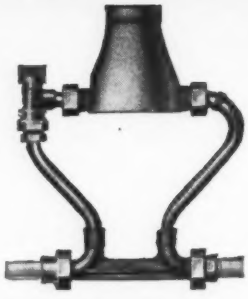
The Pittsburgh-National line of meters will be a continuation in combination of all the meters established by trade names by the two organizations in the past. These meters or parts will be available from Pittsburgh Equitable or its National Division through the same sales personnel, for no change is contemplated. Manufacturing plants of the new organization will be at: Pittsburgh; Hopewell, N. J.; Columbus, Ohio; Oakland, Calif.; and Brooklyn, N. Y.

The National Meter Co. was founded in 1870 by John C. Kelley, sometimes called the father of the water meter industry. Associated with Mr. Kelley from the start was Dr. Lewis H. Nash, a noted inventor to whom were granted 92 patents on water meters. Included among these are the first frost feature, the first successful straight reading register and the first oil-enclosed intermediate.

The Pittsburgh Equitable Meter Co. was originally founded as the Pittsburgh Meter Co. in 1887 by the inventive genius, the late George Westinghouse.

(*Continued on page 30*)

The Coppersetter
. A COMPLETE METER MOUNTING



The COPPERSETTER is a simple, convenient and durable fitting for installing water meters in horizontal service lines. It is all brass and copper, made in several heights and can be provided with an inverted ground-key angle valve at the meter inlet. Write for more information about the COPPERSETTER.

The Ford Meter Box Co.
WABASH, INDIANA

ANY OLD JOURNALS FOR SALE?

Do you have back issues of the Journal which you will make available to the Association to help replenish its stock? Send a post card telling which you have of the numbers listed below and 50¢ will be paid for each copy obtained.

1922—March, May
1924—January, May, July, September
1926—January, February, April, May, June, July, August, September, November
1929—January
1938—January
1939—March

American Water Works Association
22 East 40th St., New York

WATER-BORNE
OUTBREAKS
in the
UNITED STATES
and
CANADA

1920–1936

by
Arthur E. Gorman
and
Abel Wolman

An unparalleled summary of studies concerning the relation of water supplies to typhoid fever, gastro-enteritis, etc.

A brochure that should be in the library of every sanitary engineer.

Price $1.00—postpaid if cash or check accompanies the order.

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WATER WORKS
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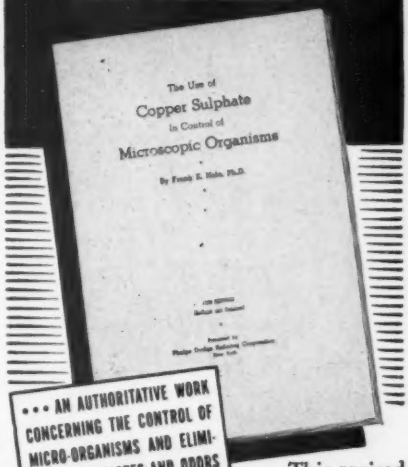
HAVE YOU A COPY OF THIS BOOK BY Dr. HALE?†



• • • AN AUTHORITATIVE WORK CONCERNING THE CONTROL OF MICRO-ORGANISMS AND ELIMINATION OF TASTES AND ODORS

This revised and enlarged edition, written by Dr. Frank E. Hale, describes in complete detail methods of control of the various forms of microscopic life commonly dealt with in water supply systems. Descriptive material includes 48 beautifully clear photomicrograph studies of the organisms discussed. Simplified methods of applying copper sulphate are also well diagramed and fully illustrated by photographs.

Thousands of copies of this 44 page book have already been distributed throughout the world. *Plant engineers and others concerned with this subject should not be without* "THE USE OF COPPER SULPHATE IN CONTROL OF MICROSCOPIC ORGANISMS." Write for it today on your business letterhead.*

* Unfortunately, because of the cost of preparation of this book, it is necessary to limit its distribution to those who are professionally occupied with this subject.
† Director of Laboratories, Dept. of Water Supply, Gas and Electricity, N. Y. C.

NICHOLS TRIANGLE BRAND
COPPER SULPHATE
99% + PURE

Made by
PHELPS DODGE REFINING CORPORATION
Refiners of Electrolytic Copper
Offices: 40 Wall Street, New York, N. Y.
230 North Michigan Avenue, Chicago, Ill.

(*Continued from page 28*)

New Materials and Gadgets

1. A new high-pressure spiral packing has been made by impregnating the outer layer with lubricant forced into the packing by a special hot pressure process. The lubricant used is a graphite grease which has been satisfactorily used for braided packing.

2. A new light-weight centrifugal pump is now on the market. It weighs 54 lb. and has a capacity of 3,000 gal. per hr. The overall dimensions are $15\frac{1}{4}$ in. long by $11\frac{3}{4}$ in. wide by $15\frac{3}{4}$ in. high. It is powered by a single cylinder, air-cooled, $\frac{3}{4}$ to 1 h.p. engine and is designed to be picked up with the suction and discharge lines still attached and moved about by one man.

3. An air-cooled welding torch nozzle has been designed with a radiator-like section made of aluminum and provided with disc-like fins. The large cooling area created by the fins is designed to keep the tubular section cooler than the ignition temperature of the fuel gas and thus eliminate pre-ignition, popping or back-firing.

4. New rubber joint packing rings are now on the market for use in joining pipe. Instead of using jute or yarn, the rubber ring is driven up to the bead in the pipe and a jointing compound or lead poured in the usual way.

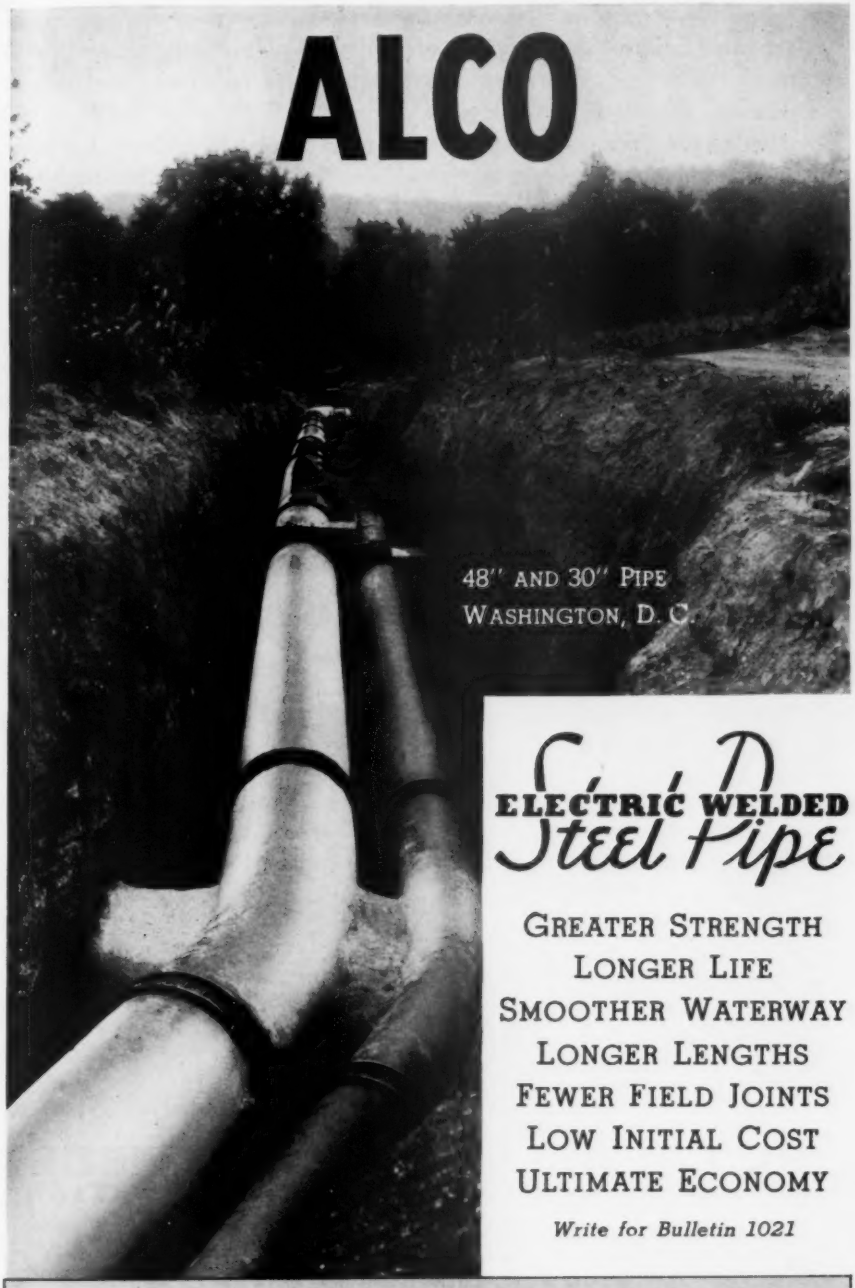
5. A drafting table has been designed so the draftsman can work in either a standing or sitting position. A foot lever is employed to raise or lower the board which is counterweighted so that by releasing a trip lever with the finger tips the board is adjusted at any desired angle.

6. Valves designed to seat tightly due to a $77\frac{1}{2}$-degree angle of closing are a recently available wafer type butterfly or blast gate valve for control of liquids, steam, air or gas. These valves are designed for both manual and automatic control by means of air and electric motors, solenoids, air and hydraulic cylinders.

7. A multiple use tool for use in emergencies such as fires is claimed to function as an axe, crowbar, chisel, pickaxe, nail puller, pinchbar, spanner wrench for pin lug and rocker lug hose couplings, sprinkler head wrench, and an electric wire cutter.

Readers can obtain further information by sending a postal to the A. W. W. A. headquarters giving the reference numbers of any of the above items and citing the April issue as the source.

(*Continued on page 32*)



ELECTRIC WELDED
Steel Pipe

GREATER STRENGTH
LONGER LIFE
SMOOTHER WATERWAY
LONGER LENGTHS
FEWER FIELD JOINTS
LOW INITIAL COST
ULTIMATE ECONOMY

Write for Bulletin 1021

AMERICAN LOCOMOTIVE COMPANY
ALCO PRODUCTS DIVISION
30 CHURCH ST., NEW YORK, N. Y. DUNKIRK, N. Y.

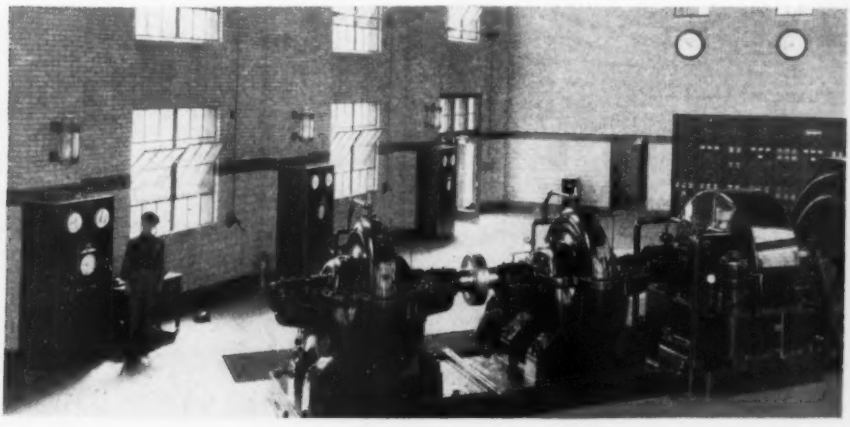
(*Continued from page 30*)

The effect on the performance of propeller pumps when installed in sumps of restricted proportions, as compared with results in unrestricted sump areas, is shown in tests recently presented by J. M. Hait, Chief Engineer of the Peerless Pump Division of the Food Machinery Corporation. Previous to these tests, there had been the assumption that equalized flow conditions of a totally unconfined sump area would result in the most efficient operation of propeller pumps. It is claimed that these tests have conclusively revealed the error of such assumption.

The question concerning the required sump sizes and dimensions into which propeller or mixed-flow pumps should be installed for most economical operation, is one of which little public data were heretofore available. Realizing the serious need for authentic engineering data the Peerless Pump Div. is now announcing the results of a series of comprehensive experiments on the matter of propeller pump sump design. Tests were made with varying distances from the pump suction to the sump floor, with different side wall clearances, and with flow arrangements restricted and unrestricted.

It was found that the axial and mixed-flow propeller pumps are more sensitive to the distribution of velocity at the inlet to the impeller than

(*Continued on page 34*)



BUILDERS VENTURI METERS
AT KANSAS CITY, KAN.,* PUMPING STATION

Flo-Watch instruments indicate, totalize, and record the flow from individual pumps. Chronoflo Summation Transmitters actuate a 24" Chronoflo Illuminated Indicator mounted so that the total pumpage is readable from any point in the plant.

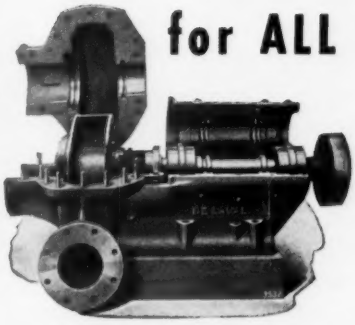
* Consulting Engineers, Burns & McDonnell Engineering Co.

Send us your metering and controlling problem. We will send complete information and latest bulletin. Address:

BUILDERS IRON FOUNDRY • PROVIDENCE RHODE ISLAND

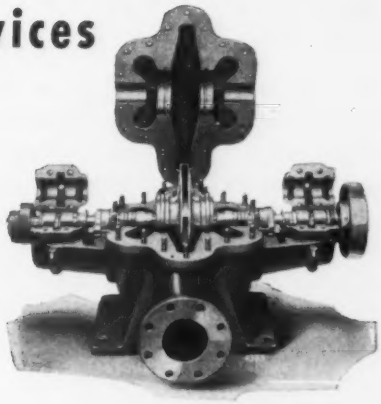
DELAVAL PUMPS

for ALL Services



CLOGLESS PUMPS

for wood pulp, sewage, etc. Split casing gives access to impeller and wearing rings without removing piping. Shrouded impeller has large passages, but develops high efficiency. Points subject to wear protected by renewable parts. Catalog B-1-3217.



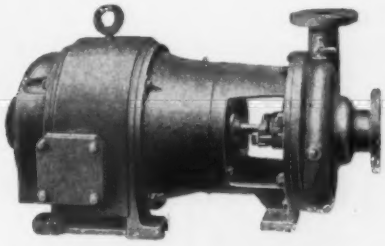
SINGLE-STAGE, DOUBLE SUCTION PUMPS

in all capacities; characterized by horizontally split casings, renewable wearing parts, including labyrinth wearing rings and shaft sleeves, complete interchangeability and high guaranteed efficiency. State delivery and head required, and ask for catalog P-3217.

PROPELLER and MIXED FLOW PUMPS

For the delivery of large volumes against low heads, using standard motor or turbine speeds.

Ask for catalog B-6-3217.



MOTOR-MOUNTED PUMPS

5 to 1200 g.p.m., 10 to 230 ft. head, any type of motor. No baseplate or special foundation required.

Ask for catalog BF-100-3217.

DELAVAL STEAM TURBINE CO., TRENTON, N. J.

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.
Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

(*Continued from page 32*)

are centrifugal pumps of lower specific speeds. The objectives of these experiments were to determine the magnitude of the change in head and efficiency by different suction arrangements and to discover the least side and bottom clearance necessary if a reduction in head and efficiency is to be avoided.

It was found that the practical proportions for a propeller pump sump from the standpoint of efficient operation are such that the side-wall and the sump bottom clearances relative to the suction bell need not exceed one-half the suction bell diameter. It was definitely proved that if the sump is installed in a large body of water without appreciable confinement, the operating head and efficiency will be lower.

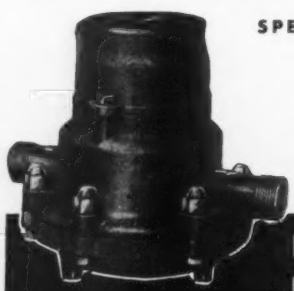
Complete reports with engineering graphs giving the full results of these experiments are obtainable by communicating with the Peerless Pump Division of the Food Machinery Corporation, 301 West Avenue 26, Los Angeles, California.

The Maryland-Delaware Water and Sewerage Association will hold its Fifteenth Annual Conference on May 8–9, at the Raleigh Hotel, Washington, D. C.

"Radial-Cone Bottom Elevated Water Tanks," a 20-page bulletin, has just been issued by the Chicago Bridge & Iron Company. Illustrations of tanks ranging in capacity from 125,000 to 2,000,000 gal. are so arranged that it is easy to compare different construction features such as cylindrical or structural columns, cone or ellipsoidal roofs, curved or straight shells and spiral stairs and vertical ladders. A table of standard sizes is included

(*Continued on page 36*)

FIRST QUALITY METERS EXCLUSIVELY



SPECIFY *American* or *Niagara*
(BRONZE CASE) (IRON CASE)
Water Meters
WRITE FOR CATALOG

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Established 1892 2914 Main St., Buffalo, N. Y.

The FIRE HYDRANT with Extra values

Extra Convenience

The Kennedy SAFETOP can be lengthened for change in street grade without excavating or shutting off the water supply, its nozzles can quickly be made to face exactly any desired direction, and all operating parts are readily accessible.

Extra Economy

Repairs to a Kennedy SAFETOP broken in a smashing collision require only a standpipe breaking ring and a stem coupling costing $6.00. These parts can be installed in less than half an hour by one man, without excavating or shutting off the water supply. Other SAFETOP economy factors are the long-wearing valve and gasket materials, and the sturdy operating mechanism.

Extra Responsiveness

Large standpipes and inlet valves, carefully shaped entrance elbow, bell-shaped nozzles, and absence of obstructions through the hydrant combine to minimize friction loss and to assure practically full main pressure at the nozzles. In addition, the simple straight-line mechanism assures easy operation.

Extra Safety

When struck by an impact which *no* hydrant could withstand, the Safety Breakable Section of the Kennedy SAFETOP parts cleanly, and no flooding can occur. Occupants of the colliding vehicle are protected from likelihood of severe personal injury, and the neighborhood is protected from damage by water or lengthy delay in returning the hydrant to service.

Send for Bulletins

The Kennedy Valve Mfg. Co., Elmira, N. Y.

KENNEDY
SAFETOP FIRE HYDRANT
REG. U.S. PAT. OFF.

(*Continued from page 34*)

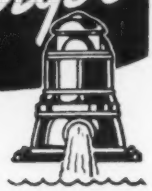
in this bulletin which will be sent to water works engineers or officials upon request to the Chicago Bridge & Iron Co., 332 South Michigan Ave., Chicago.

A 48-page book describing setting and testing equipment for water meters has recently been issued by the Ford Meter Box Company of Wabash, Ind. Complete with index, the book gives extensive illustrations, diagrams, specifications and price schedules. Of 36 subjects covered, the chief are: basement meter settings, copperhorns, coppersetters, covers for meter boxes, curb meter settings, proper location for meters, resetters, testing machines and the "testerate indicator."

The Permutit Company has recently issued these reprints on phases of water softening: "Water Softening" from the 1940–41 Laundry Buyers' Directory contains previously unpublished figures on detergent destruction in laundering and cleaning operations; and "Alkalizing Brewing Waters With the Spaulding Precipitator" describes meeting the requirement for sulfate hardness and not bicarbonate hardness in brew water.

(*Continued on page 38*)

Built to Serve Longer



Every part of a Layne Well Water System will stand the heaviest duty; the hardest grind and longest non-stop runs. They are built to stand up—and give you far more than might be expected. Dollar for dollar they will pay greater dividends. Write for Catalogs, Folders and Bulletins. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.

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"AMERICA'S LARGEST INDIVIDUAL CAST IRON PIPE FOUNDRY"

is Likewise

AMERICA'S ONLY PRODUCER OF CENTRIFUGAL CAST IRON PIPE

IN 48" DIA.

Specify MONO-CAST CENTRIFUGAL PIPE

AMERICAN CAST IRON PIPE CO.
BIRMINGHAM, ALA.
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HERSEY COMPOUND METERS

outmatch any single unit or battery of meters for capacity and accurate registration for all rates of flow. Self-contained bronze case up to six inches. For further details see the Hersey Water Meter Catalog, mailed on request.

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SAN FRANCISCO – LOS ANGELES

(*Continued from page 36*)

The Johns-Manville "Industrial Products Catalog" for 1941 is a 52-page, illustrated book just published. Insulating materials and refractory products, roofing and siding materials of several kinds, industrial friction materials, Transite electrical conduit and other electrical supplies, and Transite pressure pipe for many uses—are all described in this book, Form GI-6A, available upon request to Johns-Manville, 22 East 40th St., New York.

An all-glass pump for small installations has now been placed on the market by Nash Engineering Company of South Norwalk, Conn. Produced jointly by Nash and the Corning Glass Works, this $\frac{3}{4}$ in. by 1 in. centrifugal pump of "Pyrex" brand glass has been designed for use on small installations for a capacity of 10 gal. per min. and for laboratory and pilot plant service.

Wailes Dove-Hermiston Corp., Westfield, N. J., has published a 24-page brochure describing a great number of applications of protective coatings for unusual industrial conditions.

(*Continued on page 40*)

Manual of Design for Cast Iron Pipe—A21.1

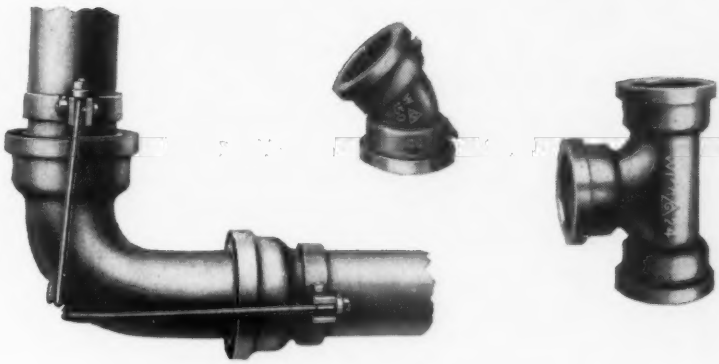
Specifications for Pit Cast Cast Iron Pipe—A21.2

Specifications for Cement Mortar Linings for Cast Iron Pipe—A21.4

It is imperative that every water works operator in charge of purchasing have at hand and follow this manual and these specifications. They are sponsored by the American Gas Association, the American Society for Testing Materials, the American Water Works Association, and the New England Water Works Association, jointly, and are recognized by both operators and manufacturers as the final authority. Order yours today.—A21.1, $.40; A21.2, $.20; A21.4, $.15. Published by

American Water Works Association
22 East 40th Street, New York

Don't let leaking joints boost maintenance costs



Leaking pipe joints mean expensive exploration . . . time and money wasted in repairs. Cut this unnecessary cost with Grinnell Socket Clamps. Joints are strengthened – all possibility of leaks eliminated. The steel clamps and rods are covered with durable protective coating. Grinnell Socket ¼ and ⅛ Bends are provided with convenient lugs for quick, secure installation. Grinnell Socket Clamps are available in a wide range of sizes and lengths – both Friction and Positive Types – to handle any joint and any size of fittings. Grinnell Company, Inc., Executive Offices, Providence, R. I. Branch offices in principal cities.

SOCKET FITTINGS BY

GRINNELL

WHENEVER PIPING IS INVOLVED

(*Continued from page 38*)

"Procedure for the Maintenance of Housing Standards in Milwaukee," an article by Charles L. Senn, Assistant Chief in Charge of Sanitary Inspection in the Milwaukee Health Department, appearing in *Public Health Reports* for January 31, emphasizes the importance of proper handling of water in houses in maintaining public health:

"Sufficient evidence has been accumulated to show that there is a definite relationship between housing and health. It appears to be agreed, generally, that housing is a concern of all health departments, and that health departments in the routine conduct of their duties do many things of immediate, practical value in maintaining reasonable dwelling standards in the communities which they serve. . . .

"The shift, a few years ago, of the 'best residential' section from large homes in the central city to the newer suburban areas, left many large residences unoccupied. These have been taken over by tenants who desired to use them for the establishment of rooming houses and for light housekeeping rooms. . . .

"These light housekeeping places present a housing problem in terms of crowding, safety, and sanitation. . . .

"One of the most objectionable features of light housekeeping has

(*Continued on page 42*)

Economies in Office Forms
By Israel Rafkind

Recommended Practice for Distribution System Records

Committee Report

Coordinating Operating System Records With Accounting Records
By Nathan B. Jacobs

UNDER ONE COVER

These three documents, reprinted from the February, 1940, issue of the JOURNAL, constitute a basis upon which the head of any water department, whether it be large or small, may build an economical and practical system of keeping distribution records. The system recommended is wholly adequate, yet in no way burdensome. These outlines are compiled by authorities and should be in your hands today.—64 pp., $.25.

American Water Works Association
22 East 40th Street, New York

GRAPH & NOMOGRAM

from

Charles P. Hoover's

Practical Application of the Langelier Method

Jour. A. W. W. A., 30: 1820 (1938)

An indispensable aid to every sanitary engineer and chemist.

Hundreds of copies distributed since publication.

Issued flat, unbound, unaccompanied by text matter.

Nominal charge of ten cents per copy to cover costs of printing and mailing. Send stamps or coin with order.

Address The

American Water Works Association

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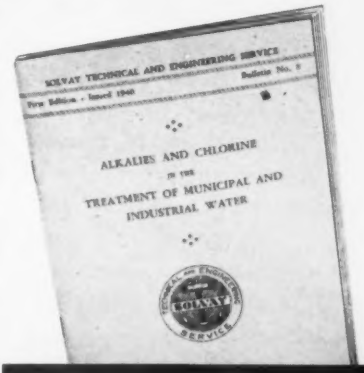

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This comprehensive survey on water treatment has already become famous. Every water-treatment expert should have it at his fingertips. It describes briefly the various treating processes for water used for both municipal and industrial purposes.

FILLED WITH TABLES AND CHARTS

Bulletin No. 8 is filled with tables, charts, cost comparisons and other specific data which will prove invaluable to water works engineers and industrial operators who treat large volumes of water. Write for Bulletin No. 8 today. You can't afford to be without it!

SOLVAY SALES CORPORATION
40 Rector Street, New York, N. Y.

Kindly send me a copy of your new Solvay Technical and Engineering Service Bulletin No. 8, "Alkalies and Chlorine in the Treatment of Municipal and Industrial Water."

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City ..... *State* DN-441

(*Continued from page 40*)

been the lack of adequate means for procuring and disposing of water. One clause in the new ordinance has made possible the alleviation of such conditions to a marked degree. Under this clause, a sink must be installed in each dwelling unit. Occupants need not obtain all water from the bathroom if there is running water available to them in their own living quarters, nor do they have to dispose of all waste water by returning it to the bathroom. . . .

"An important factor in the Milwaukee procedure for improving housing standards has been the close cooperation of the department of public assistance with local enforcement agencies.

"The department of public assistance of Milwaukee County has shown a keen interest in the housing problem of families receiving assistance. It has aided materially in bringing about housing improvements by insisting that rooms which are too small, which have inadequate window areas, or which lack fire exits are not to be occupied by relief clients. This department routinely has refused to rent units in rooming houses which are not licensed by the health department.

"The housing division of the department of public assistance permits clients to find their own quarters within the limits of their budget. The

(*Continued on page 44*)

Cathodic Protection

The only positive method of preventing rusting, pitting and corrosion in steel water containers.

THE PATENTED

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METHOD

Steel Water Tanks
Filter Beds

For complete details write

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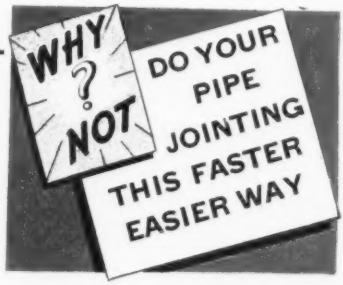
1440 W. State St., Fremont, O.



Why wait days for initial leakage to seal? With *Tegul*-MINERALEAD Sulphur-base jointing compound, it seals almost at once • *Why not* cut laying costs? T. M. requires no skilled labor • Why risk changes in mixture en route to the job? They don't happen in the T. M. solid 10 lb. ingot • Why chance rain or flood catching your compound unprotected? Water has no effect on the T. M. ingot • The COST? Still another pleasant surprise • T. M. is stocked in major cities conveniently near you • Write for full information. The ATLAS MINERAL Products Company of Penna., Mertztown, Pennsylvania.

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For Jointing BELL & SPIGOT PIPE

WORTHINGTON
EQUIPMENT FOR WATER SUPPLY

CENTRIFUGAL PUMPS	STEAM AND POWER PUMPS
DEEP WELL TURBINE PUMPS	SUMP AND DRAINAGE PUMPS
DIESEL ENGINES	GAS ENGINES
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WATER METERS

A complete line of water meters of every type is manufactured by Worthington-Gamon Meter Company, a subsidiary of Worthington Pump and Machinery Corporation.

● *Descriptive literature on any of these products furnished on request*

WORTHINGTON PUMP AND MACHINERY CORPORATION
WORTHINGTON-GAMON METER COMPANY

General Offices: HARRISON, NEW JERSEY *District Offices and Representatives in Principal Cities*

CDB-7C

(*Continued from page 42*)

rent is paid directly to the landlord by the county. Rents are paid according to a definite evaluation schedule, and no place is rented until complete investigation has been made by the housing division.

"Dwelling units are classified, in order that the maximum amount of rent allowable may be determined. The rates are established according to the availability of water, gas, electricity, inside toilets, private toilets, and like facilities. Quarters are further considered with reference to the number of rooms and the number of persons in the family to occupy them.

"Based on these considerations, a maximum rent of $18 per month, for example, would be paid for three rooms to be occupied by three people, if the rooms were equipped with water, gas, electricity, and inside toilet.

"Housing investigators of the public assistance department check the buildings for general upkeep, cleanliness, screens, type and quantity of furniture, sanitary facilities, window areas, tightness of windows, type of heating, dampness, condition of basements, attics, stairs, hallways, and other pertinent factors. Deductions are made for each of the points in which the dwelling unit is deficient. A maximum rent allowance can be paid for any place rating between 85 and 100 per cent. Rent allowance is

(*Continued on page 46*)

A. W. W. A.
Membership Certificate

A fine newly designed parchment paper membership certificate for A. W. W. A. members is now available in 9 by 12 inch size, suitable for framing.

Send your name—exactly as you wish it to appear—and enclose 40¢ in coins or postage to cover cost of lettering and mailing.

The certificate will be delivered within 10 days of receipt of order—ready for you to frame and hang in your office.

The American Water Works Association

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CAST IRON PIPE

Manufactured in Sizes 2″ to 96″—
A large stock constantly on hand,
facilitating prompt shipment.

Flanged Pipe
Flexible Joint Pipe
Bell and Spigot Pipe
Special Castings
Short Body B. and S. Specials
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Sales Offices

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75 Federal Street, Boston, Mass.

Works

Phillipsburg, N. J. **Everett, Mass.**

(*Continued from page 44*)

proportionately decreased until a rate of 65 per cent is reached. No quarters rating at or under 65 per cent are rented without referring the premises to the attention of the building inspection department or to the health department for investigation. Once declared unfit by the building inspection department, a place will not be rented by the department of public assistance. If the building is structurally unsafe, it is, of course, condemned by the building inspection department.

"Minor defects in one- and two-family places—such as faulty plumbing, leaky roofs, broken windows, and the like—are referred directly to the owner by the housing division of the department of public assistance. When the owner refuses to correct insanitary conditions, the health department investigates. Upon decision that the quarters are unfit for human habitation, the relief department refuses to pay further rent until the conditions are corrected. . . .

"Before certain outlying districts were incorporated in the city limit, numerous individual bungalow-garages were built in these districts by persons who hoped soon to have funds with which to construct permanent homes. During the depression, building and loan companies and finance corporations took over many of these structures planned by their owners as temporary and makeshift dwellings, and rented them as low-cost housing units.

"Health problems soon developed, for with careless tenants occupying a building which had no sink, no inside toilet, and no running water, the improperly placed wells were soon contaminated. There was also the practice on the part of housewives of throwing waste water into the yards, further to complicate sanitary enforcement.

"In 1937 a survey was made to determine how many privies, chemical toilets, and private wells were in use by the impoverished families in outlying sections. Orders were issued to install city water and sewer connections on all premises abutting on streets having public sewers and water. Owners who lived on the premises generally complied when orders were issued, even at considerable financial sacrifice. Many of the landlords and corporations, however, failed to comply. A decision by the city attorney held that existing ordinances did not give the health department authority to enforce these orders and more than 100 contemplated orders were dismissed before action was brought.

(*Continued on page 48*)

Trade Mark MABBS Reg. U. S. Pat. Off.

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

MABBS RAWHIDE PACKING

on your Water Works and Sewage pumps and valves. Practically antifrictional, it saves enough in POWER to pay for itself in a short time. For over 45 years Mabbs Rawhide Packing has proven its superiority over other packings for these purposes.

Why not use it in your plant and benefit thereby?

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*, 431 S. Dearborn St., Chicago, Ill.

The Trend Is Toward Activated

"Chosen Because of Premium Performance"

Of course it pays to use Activated's products! This is borne out by the fact that they're used by so many large and important cities and concerns.

Our Activated Alum or Blackalum is considered second to none at

Buffalo, Trenton, Richmond, Norfolk, Newport News, Raleigh, Greensboro, Charlotte, Poughkeepsie, Cumberland, Lancaster, Fredericksburg, Harrisburg, Washington Suburban Sanitary District, Athol, etc.

Government Posts at which our alums need no introduction

Aberdeen Proving Ground, Edgewood Arsenal, Fort Meade, Fort Belvior, Langley Field, Fort Bragg, Quantico Marine Post.

Our Activated Carbon is shown preference at

Buffalo, Richmond, Trenton, Niagara Falls, Albany, Washington Suburban Sanitary District, Cincinnati, Baltimore, Charlotte, Fredericksburg, etc.

Palmer Filter Bed Agitators are, by their efficiency, proving their value at

Akron, O.; Allentown, Pa.; Buffalo, N. Y.; Charlotte, N. C.; Chester, Pa.; Citizens Water Co. at Scottdale, Pa.; Columbus, O.; Detroit, Mich.; Fayetteville, N. C.; Erie, Pa.; Indianapolis Water Co.; Newport News Waterworks Commission; Olean, N. Y.; Lynchburg, Va.; Statesville, N. C.; and such alert industries as American Enka Corp., Asheville, N. C; American Writing Paper Co., Holyoke, Mass.; Anheuser-Busch, St. Louis, Mo.; Consolidated Water, Power & Paper Co., Wisconsin Rapids, Wis.; Del-Mar-Va Power Co., Vienna, Md.; E. I. du Pont de Nemours Co., Charlestown, Ind., Buffalo, N. Y., Belle, W. Va., Eastern Corp., South Brewer, Me.; Gulf States Utilities Co., Baton Rouge, La., Hammermill Paper Co., Erie, Pa.; National Biscuit Co., Marseilles, Ill.; Nekoosa Edwards Paper Co., Port Edwards, Wis.; Rayonier Paper Co., Hoquiam, Wash.; West Virginia Pulp & Paper Co., Covington, W. Va.

Bleaching Clay is a comparative newcomer in waterworks coagulation, every day receiving testimonial letters on its performance as an aid to coagulation and an assistant in the removal of tastes and odors. Laboratory samples will gladly be sent upon request.

These products which are giving such splendid results elsewhere should do the same for you!

ACTIVATED ALUM CORP.
Curtis Bay, Baltimore, Md.

(*Continued from page 46*)

When the passage of a new ordinance was being considered, companies holding the properties for rental purposes argued that if the building foundations were improved, plumbing installed, and proper connections for running water made, large increases in rent would necessarily follow. This would, in turn, oblige the low rent tenants to move to rooming houses or to more dilapidated buildings in the congested part of the city. Pending adoption of a covering ordinance, the health department is attempting to require flyproof privy vaults, safe water supplies, and reasonable adherence to sanitary conditions. If it is found that such standards cannot be sustained, it is required that water and sewer connections be made or the property be vacated as a health hazard and a nuisance. . . .

"The new Federal Housing policy of making available suitable dwelling places to lower income groups will help only a limited number of persons in a city the size of Milwaukee. For years to come there will exist the need of controlling the housing situation in the congested areas of the city, so that safe places to live, measuring up to known and legally enforceable standards, may be provided for people with low incomes and for families on relief. . . ."

(*Continued from page viii*)

Affiliates

SEEGER, M. DEANE. Water Comr., Water Dept., City Hall, Bellingham, Wash.

Reinstatements—Active Members

BAXTER, GEORGE. Deputy City Water Engr., City Water Dept., 6 Cockburn St., Edinburgh, 1, Scotland
BLAKEMAN, H. W. Supt. of Water Works, City Hall, Rayville, La.
HANDORF, EVERETT C. San Engr., Dept. of Health, Memphis, Tenn.
KLEISER, PAUL J. 925 E. Donald St., South Bend, Ind.
RIDGWAY, W. C. Supt. of Water Works, Lebanon, Ind.
TESSIER, A. H. Eastern Repr., International Water Supply, Ltd., 5644 Woodbury Ave., Montreal, Quebec, Canada

Reinstatements—Corporate Members

SEAFORTH PUBLIC UTILITIES COM. Waterworks Dept., Seaforth, Ont., Canada

Resignations—Active Members

BROZ, FRANK J. Supt. of Water, Town Hall, 2517 S. 50th Ave., Cicero, Ill.
HOLMES, W. A. Storekeeper, Bureau of Water Works & Supply, 510 E. 2nd St., Los Angeles, Calif.
LOCKE, J. DONALD. Sales Mgr., Long Beach Iron Works, 2100 W. Anaheim St., Long Beach, Calif.
PARKER, J. A. Supt. of Water Plant, Sylacauga, Ala.

Resignations—Affiliates

TRUNKEY, C. F. Water Comr., Water Dept., 814-14th St., Bellingham, Wash.

Deaths—Active Members

HAMMOND, W. H. Supt., Lindsay Water Works, Lindsay, Ont., Canada

Transfers Between Sections

CAPLAN, LOUIS R. From Four States to Virginia
FRISK, PAUL W. From North Carolina to South America
GETZ, JOHN G. From Michigan to Illinois
KINSEL, HARRY L. From New England to Four States
SHERMAN, ARTHUR L. From New Jersey to Four States

News of the Field

The A.W.W.A. Toronto Convention Program is being given its final touches and will be sent, in condensed form, to every member of the Association about May 20.

As it stands today, it is evidence of the fact that the Association's membership and technical committees are going ahead in good order. Every part of the program fits into some organized activity of the Association or covers some one of today's problems facing the water works man.

Naturally, with the world what it is today, defense measures are key topics at Toronto. An internationally known leader in the field of water supply will describe the situation in which British overseas water plants have found themselves during the present conflict. Possible interruptions to routine methods of communication and emergency methods available will be described. A symposium on methods and equipment useful for distribution system repairs will be a feature of the sessions since it appears that the distribution system is most subject to damage in war time. All types of emergency chlorination equipment and experiences with some of them will be described. State wide defense plans for water systems will be described by an official of one of the eastern industrial areas.

Abel Wolman, Vice-President-Elect of the A.W.W.A., will present the results of his study of several regional water supply developments. His report will cover not only the steps taken to obtain such supplies but also the administrative and management plans under which a group of cities or a combination of cities and county groups operate. With the growth of unincorporated areas in which now live many people who want the advantages of a public water supply, such a study by this well known water works engineer is bound to have great value.

The latest plans for the solution of the Houston, Texas, water supply problems will be described by that water department's chief engineer. This city, which is one of the most rapidly growing population centers in the United States, is moving toward the solution of important questions related to water supply and its plans are certain to be of great interest.

One of the nation's major problems is the life of impounding reservoirs. The U. S. Soil Conservation Service has for several years been studying the damage done to such water storage facilities. Carl B. Brown, Chief of the Reservoir Section of this government department, is scheduled to present the record of these investigations which mean a great deal to the water supply of the future. Bad soil handling practices can destroy, in a short time, the value of a city's reservoir site—which may be the only one economically useful. No better example of the fact that well controlled land-use policies are needed can be found than in this story of the danger to water supply if some of the bad farm practices continue.

(*Continued on page 2*)

(*Continued from page 1*)

What does Civil Service mean to water works? Its benefits, as well as its limitations, will be discussed by leaders in the municipal field—Probst of St. Paul and Van Norman of Los Angeles.

Pending legislation relating to the extension of Federal Security Benefits to municipal employees will be discussed by Dale Maffitt of Des Moines, Chairman of the Association's Committee on Social Security. Under the provocative title "Public Relations Begin at Home," John C. Mellett of Indianapolis will tell the convention attendants how to keep friends and influence public attitude.

Two papers are scheduled on measures to lengthen the service life of elevated storage tanks. One covers experimental studies of various types of paint used on steel water works structures and the other, recent experiences with "cathodic" protection. Cement lining of large pipe lines is gaining recognition, so three papers will cover this topic. One will tell of lining an old steel line; one of lining a new steel line, and the third will tell of lining a 48-inch cast iron main after many years of service.

Water works men feel the need of better understanding of current practices related to protective grounding of electric circuits. The Association is sponsoring at New York University a research project which is intended to develop, under carefully controlled conditions, some of the facts associated with this practice. Professor Rolf Eliassen, who is to direct the work, will describe the problem and the methods planned for its study.

The Association's Steel Pipe Committee, which, under the chairmanship of W. W. Hurlbut of Los Angeles, has developed a series of specifications for steel pipe and its protective coating and lining will hold a meeting during the convention. A sound-movie illustrating the fabrication and installation of the Stone Canyon pipe line at Los Angeles will be shown. There will follow an illustrated paper on equipment for the application of pipe coatings and a discussion of a contemplated standard for steel pipe flanges.

The experiences of Rochester, N. Y., following the accidental pollution of the public supply mains with river water from the fire mains, will be summarized by Earl Devendorf, Associate Sanitary Engineer of the New York State Health Department. In the same session the Association's Committees on Cross-Connections and Distribution System Safety will present reports of vital interest, and the large amount of study being given to safety in plumbing will be reviewed.

The Plant Management Division has planned an unusually valuable program. Four leading superintendents will bring in reports upon policies current in a large group of cities. They will cover: Water Main Extension Policies; Meter Reading and Commercial Department Practices; Meter Repair Schedules and Costs; and Control of Automobile Fleets. There will also be presented a paper covering the special meter rate problems

(*Continued on page 4*)

RELOCATING PIPE SAVES DEFENSE DOLLARS

"This photograph illustrates the lowering of a 16-inch cast iron water main at Fort Jackson, South Carolina, in connection with the present National Defense program. This line was originally laid in 1917, during the last world war. The line was lowered under pressure and after 23 years of service, no leaks were found and the pipe was naturally in perfect condition. There is an offset in this line of about 15 feet, yet nothing but straight pipe was used." (The foregoing is a simple transcription of the statement submitted by the contributor of the photographs.)

Note for Water Works Men: ***The original use of cast iron pipe made this money-saving operation possible.***

CAST Q IRON

Look for the "Q-Check" Registered trade mark.
Cast iron pipe is available in sizes from 1 1/4 to 84 inches.

The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois

CAST IRON PIPE
PUBLIC TAX SAVER NO. 1

(*Continued from page 2*)

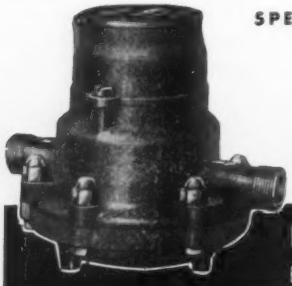
developed in cities where special pumping to small districts increases the cost of operation. Steps taken to prevent future interruptions at Buffalo's pumping station will be recorded by Superintendent L. A. Bergman.

The Finance and Accounting Division will continue its discussions relating to the joint administration of water and sewer departments in the form of a report by its special committee under the leadership of Leonard Thompson of St. Paul. Management and accounting practices in two large departments will be presented by Longwell of the East Bay Municipal District, Calif., and Hughes of Denver, Colo. L. G. Lenhardt of Detroit is scheduled to present a study of practices of the Federal Housing Authorities as they affect water department operations. Water Works Management in Canada; Special Rates and Free Water Service; and Taxation of Water Department Property are other topics of importance before this Division for study.

The Water Purification Division will continue its long record of activity with one session devoted to reports of progress in, or completion of work by, eight committees. The high spot of this Division's sessions will be one devoted to a symposium on the proposed revision of the U. S. Public Health Service Standard for Drinking Water. Scheduled participants are Hoskins of Washington, Cox of Albany, Norcom of New York City, Baylis of Chicago, and Wolman of Baltimore. It is expected that the voluntary discussion from the floor will make the session one of the most important at the convention. The previous standards of 1914 and 1925 had a major effect upon water supply quality in the United States and a secondary effect upon world-wide ideas concerning quality of a safe water supply. The forthcoming standards will take into account the present ideas concerning the relation of public health to water quality as defined in the previous standard. The discussors will doubtless examine the subject of training and continuity of service of personnel responsible for water quality, since it appears that some of the obscure outbursts of disease thought to be water-borne may not be the result of too low a standard of quality but may be ascribed either to deficiencies in plant administration

(*Continued on page 6*)

FIRST QUALITY METERS EXCLUSIVELY



SPECIFY *American* or *Niagara*
(BRONZE CASE) (IRON CASE)
Water Meters
WRITE FOR CATALOG

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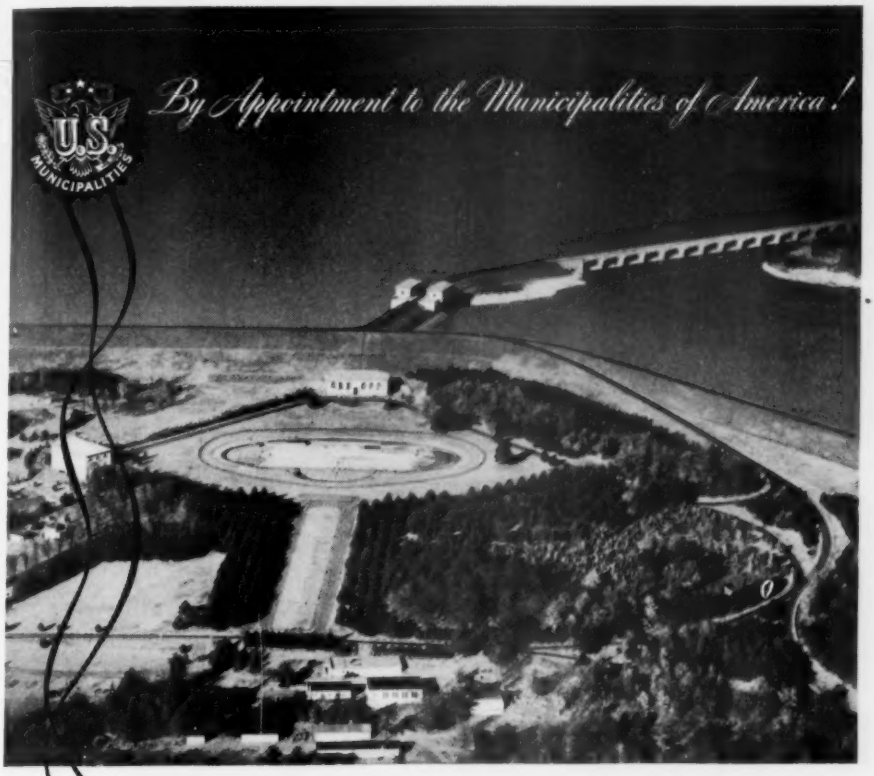
Established 1892 2914 Main St., Buffalo, N. Y.



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Municipal officers in charge of water purification and sewage disposal phases of public health have long recognized the value of using General Chemical Aluminum Sulfate in water and sewage treatment.

Scrupulous adherence to quality standards and the ability to overcome delivery handicaps in times of emergency are but two of the many factors that enable General Chemical Company to make a real contribution to public health.

The cooperation of our specialists is extended to consulting engineers and to municipal officials who are designing, building or operating water and sewage plants. Your inquiries are cordially solicited.

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Sales Offices: Atlanta • Baltimore • Boston • Buffalo • Charlotte (N. C.) Chicago • Cleveland • Denver • Detroit • Houston • Kansas City Milwaukee • Minneapolis • Newark (N. J.) • New York • Philadelphia Pittsburgh • Providence (R. I.) • St. Louis • Utica (N. Y.)

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(*Continued from page 4*)

or to misadventures of the supply after it is delivered on the property of the customers.

Every year makes it plainer that a general convention of the Association and the papers on its program are not hap-hazard affairs. The American Water Works Association is increasingly recognizing that it is a part of the American municipal management scene. Its activities are affected by the activities of other technical associations as well as by the activities of local, state, national and international groups and organizations. The papers scheduled at its convention all have a definite justification for their presentation and fit into the general long-term program of improving water works service as well as the public health and safety of city dwellers throughout North America.

A message from England to American water works men is quoted in part below. It is a communication to the Secretary of the A.W.W.A. from the Conjoint Conference of Public Utility Associations, on which the British Waterworks Association is represented, and is sent by the President, Lord Falmouth, and by Honorary Secretary A. W. Smith.

(*Continued on page 8*)

DIFCO

Presumptive and Confirmatory Media for Detection of Coliform Bacteria

These Dehydrated Culture Media, Difco are prepared expressly for the detection and confirmation of coliform bacteria in water. Each medium conforms to the requirements of "Standard Methods of Water Analysis" of APHA–AWWA in ingredients, formula and reaction.

The use of these Dehydrated culture Media, Difco, insures reliable and comparable results.

Bacto-Lactose Broth

Bacto-Brilliant Green Bile 2% **Bacto-Formate Ricinoleate Broth**
Bacto-Crystal Violet Lactose Broth **Bacto-Fuchsin Lactose Broth**

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THE TRADE NAME OF THE PIONEERS
In the Research and Development of Bacto-Peptone and Dehydrated Culture Media

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DETROIT, MICHIGAN, U. S. A.

STREAMLINED STORAGE

Here is an elevated tank that is modern in every respect. It has a radial-cone bottom, the design that makes possible the storage of large quantities of water with a very low range in head. It has an ellipsoidal roof, to give it a more pleasing appearance and to cut down the waste space found under the conventional type of roof. It has a tubular-column tower instead of the usual structural tower, eliminating all horizontal struts and providing smooth surfaces that are easy to paint. The horizontal lines of the balcony give the final modern touch.

Regardless of appearance, elevated tanks are built to provide water by gravity pressure to distribution mains. This one serves the city of Kalamazoo, Mich., having a capacity of 750,000 gals. Write for our new booklet "Radial-cone Elevated Water Tanks" for complete information on large capacity storage tanks.

CHICAGO BRIDGE & IRON COMPANY

Birmingham, Ala. Boston, Mass. Chicago, Ill. Cleveland, O. Dallas, Tex. Detroit, Mich. Houston, Tex. Los Angeles, Cal. New York, N. Y. Philadelphia, Pa. San Francisco, Cal. Tulsa, Okla.

(*Continued from page 6*)

"At the recent Annual Meeting of the Conjoint Conference of Public Utility Associations which represents the Water, Gas and Electricity Supply Services of the United Kingdom of Great Britain and Northern Ireland, the members present unanimously resolved to express to the Water, Gas and Electricity Supply Industries of the United States of America the nation-wide sense of appreciation felt here for the aid which has already been received from your Country and for that which we know is still to come in ever increasing volume.

"Engaged as we are, well nigh single-handed, in a life and death struggle with a powerful and unscrupulous enemy, it is an unspeakable satisfaction and comfort to us to know that we have both the material and the moral support of the vast majority of our English-speaking brethren across the Atlantic. . . .

"Knowing how much the Public Utilities of this country have been called upon to do in order to further the national effort—an obligation which, despite difficulties, they have happily been able to perform—we realise that in making aid to Britain possible you must have played a notable part demanding greatly increased effort. For that we are specially grateful to all engaged in the great Supply Services which you represent.

(*Continued on page 10*)

MARION, IND.

VETERANS HOSPITAL

installs

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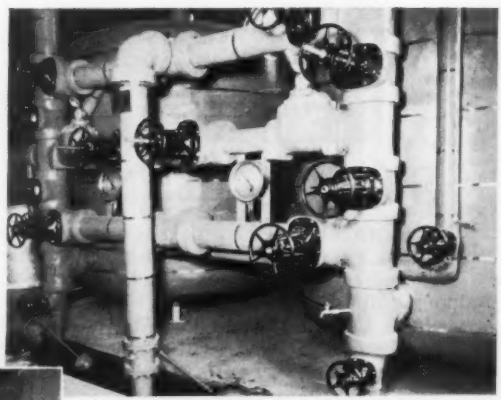
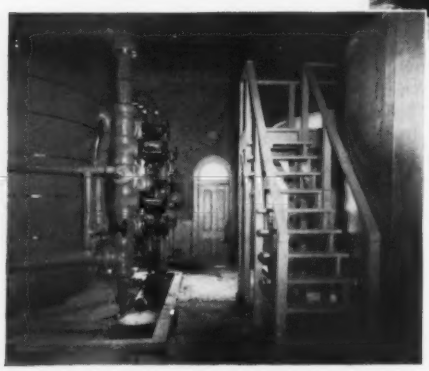
Water Softeners





● No installation is too large. No water is too tough. Refinite engineers can solve YOUR water problems. Let us consult with you on removal of iron, manganese or hardness. Ask about Refinite *Natural* high-capacity zeolite—with a durability record of more than 20 years.

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Free

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PERCHLORON

...for water purification

...sewage treatment

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This new 32-page illustrated booklet tells how to use Perchloron, the stable and dustless high strength calcium hypochlorite. It supplies valuable data on:

- Explanation of "Available Chlorine"
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ABOUT PERCHLORON

Perchloron has an available chlorine content guaranteed not less than 70%, is free flowing, concentrated, dissolves readily in water and is so uniform that technical supervision is simplified. It retains its labeled strength for a year or more under normal storage conditions, and may be dispensed either from a suitable dry feeding machine or as an aqueous solution. Packed 9 cans to the case, each can with handy air-tight cover, or in 100-lb. drums.

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals

(*Continued from page 8*)

"To our warmest greetings, therefore, are added our heartfelt thanks not only to you but to the millions of your fellow-countrymen who—sharing with us our detestation of aggression and all that it connotes, are helping us in our struggle to preserve the rightful heritage of all free Peoples."

O. J. Semmes, Jr., formerly City Engineer for the City of Pensacola, Fla., is now with the firm of Yonge & Hart, Architects and Engineers, Pensacola, Fla.

Albert E. Wilson, Jr., recently left the position of Assistant Chemist for the Division of Water, Norfolk, Va., to become Superintendent of Filtration at Fredericksburg, Va.

George S. Bonn, Research Engineer for the Springfield, Ill., City Water, Light & Power Dept., was inducted in the Army on March 27 at Chicago. Mr. Bonn built up *Waterlite News*, published by and for the employees of the Springfield Dept. He described these experiences at the Kansas City Convention and his material, including many valuable ideas, was published in the September, 1940, JOURNAL.

(*Continued on page 12*)

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Here's A Steel Pipe Tip

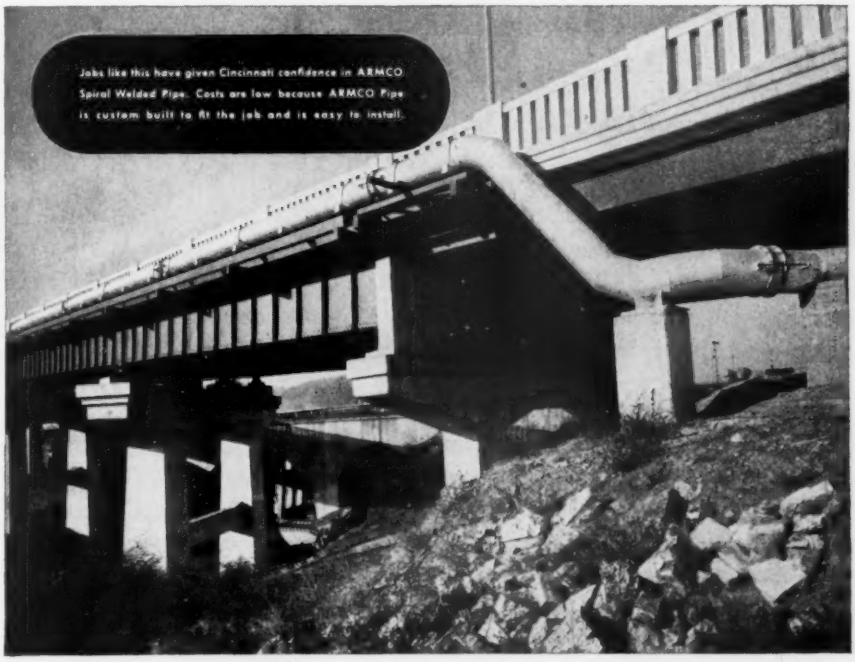
From A City That Knows

The next time you need pipe for supply and force mains, remember Cincinnati's experience. Years ago they tried ARMCO Spiral Welded Steel Pipe, liked it, and kept coming back for more. Today this thriving industrial center knows that ARMCO Pipe insures high flow capacity, low leakage loss and freedom from breakage.

Almost a century of successful municipal use has demonstrated the durability, efficiency and economy of steel pipe for water mains. And thanks to improved coatings, linings and manufacturing methods an even better product is now available in modern ARMCO Spiral Welded Pipe.

With diameters from 6 to 36 inches, wall thicknesses from 7/64 to 1/2-inch and lengths up to 50 feet, ARMCO Pipe will meet your every requirement. Try "Spiral Welded" on your next job. Just write us for prices and complete data. The American Rolling Mill Company, Pipe Sales Division, 1451 Curtis Street, Middletown, O.

CINCINNATI Continues to Use ARMCO Spiral Welded Pipe


Jobs like this have given Cincinnati confidence in ARMCO Spiral Welded Pipe. Costs are low because ARMCO Pipe is custom built to fit the job and is easy to install.

ARMCO SPIRAL WELDED PIPE

Steel Pipe . . . An Old Product Made Better . . . Meets AWWA Standard Specifications

(*Continued from page 10*)

New Materials and Gadgets

1. A new type of rubber hose has been designed by applying the principles of balanced engineering construction first applied to conveyor belts. Advantages claimed are: great flexibility, lightness in weight, ease of handling, and inseparable covers and plies. It is available for use for water, air, steam or oil.

2. Recording instrument charts for continuous re-use have been made with a plastic which permits the previous day's ink record to be readily removed with a damp cloth. The charts are said to be non-flammable, and oil, gasoline and grease resistant.

3. Loose leaf covers for meter books and other records are now available in plastic. They are molded of a tough, black Durez to prevent dirt from showing and prevent cracking or splitting.

4. A new coupling for use in connecting diesel, gasoline, gas or oil engines to any type of driven machinery has been designed as a rubber gland lined with a pre-moulded, pre-vulcanized cylindrical section treated to prevent air loss. The gland is bonded to outer and inner steel rims. Pulsations of vibrating machinery can be minimized in transmission and the degree of resiliency of the coupling varied by pumping in more air or releasing some through a standard tire valve.

5. A combined pressure reducing valve has been designed to hold down excessive municipal water pressure for supplying domestic hot water systems by uniform pressure and to prevent by means of a check valve hot water from backing up into the cold water system.

6. New lenses for safety goggles have been designed of relatively uniform strength to withstand the impact of weights up to 3 oz. dropped from a height of 54 in.

7. Cleaning plant floors without soap or water is now accomplished with a new machine which can also be used for sanding old wood floors or for polishing new floors.

Readers can obtain further information by sending a postal to the A. W. W. A. headquarters giving the reference numbers of any of the above items and citing the May issue as the source.

(*Continued on page 14*)

A Water Meter, like most recording instruments, is useless unless it is accurate and dependable. Upon the registration of water used is predicated to a large extent the financial structure of the average water department. Unlike most recording instruments, water meters are scattered all over the community, and therefore cannot always be under the constant scrutiny of maintenance men. This condition absolutely necessitates a well-built, fool-proof meter with low maintenance cost. The wide acceptance of Hersey Meters in the waterworks field has been built on the accuracy and low maintenance cost Hersey has built into its meters for more than half a century.

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(*Continued from page 12*)

Arthur T. Clark

Arthur T. Clark, of Morristown, N. J., has been appointed Secretary-Manager of the Water and Sewage Works Manufactures Association, the national organization comprising 150 leading manufacturers in the fields of water supply and sewage disposal.

Mr. Clark is a Civil Engineer of unusually broad experience in operation, construction and design of plants, as well as in the manufacturing and sales aspects of the water and sewerage fields. After being graduated from Rensselaer Polytechnic Institute with the degree of Civil Engineer in 1903, Mr. Clark became Assistant Engineer with Robert E. Horton, Consulting Engineer at Albany, N. Y.; then Superintendent of the Municipal Commission of Herkimer, N. Y., in charge of Water, Sewer, Electric, Police and Fire Departments; and subsequently Manager of the South Bay Consolidated Water Co., Long Island, N. Y.; and Chief Engineer of the Community Water Service Co., New York.

(*Continued on page 16*)

American Water Works Association
61st Annual Convention
Toronto, Canada—June 22-26, 1941

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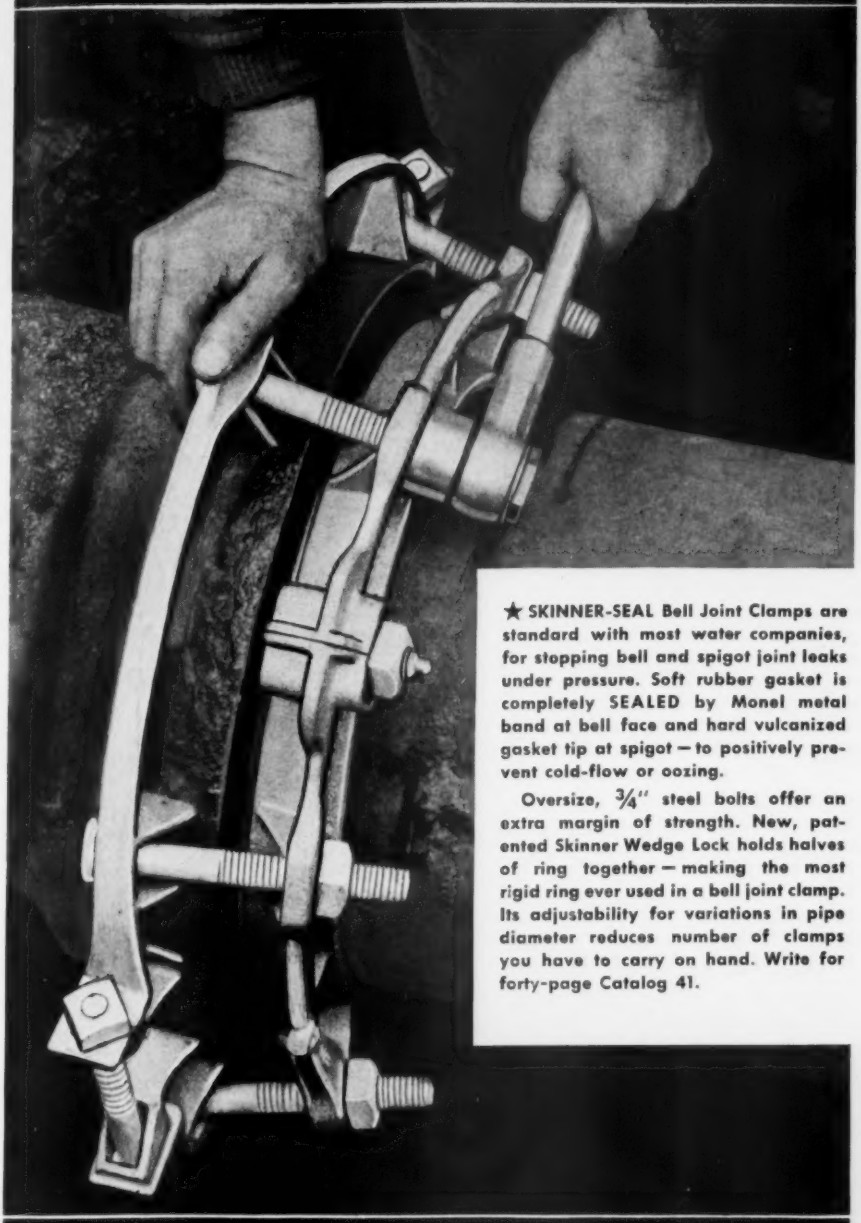


★ **SKINNER-SEAL Bell Joint Clamps are standard with most water companies, for stopping bell and spigot joint leaks under pressure. Soft rubber gasket is completely SEALED by Monel metal band at bell face and hard vulcanized gasket tip at spigot — to positively prevent cold-flow or oozing.**

Oversize, 3/4" steel bolts offer an extra margin of strength. New, patented Skinner Wedge Lock holds halves of ring together — making the most rigid ring ever used in a bell joint clamp. Its adjustability for variations in pipe diameter reduces number of clamps you have to carry on hand. Write for forty-page Catalog 41.

M. B. SKINNER CO., SOUTH BEND, IND.

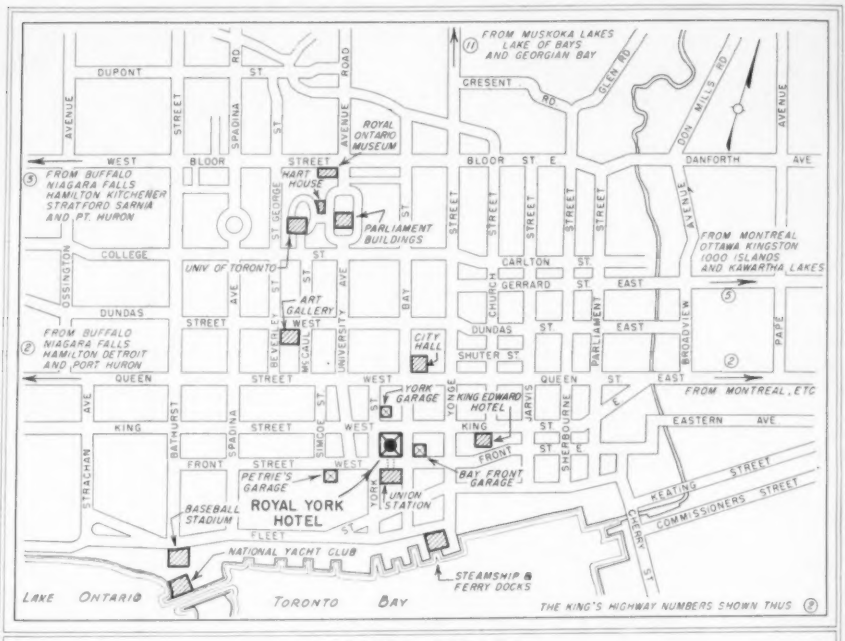
(*Continued from page 14*)

Following several years in both consulting and municipal engineering work at Montclair, N. J., Mr. Clark became affiliated with the sales engineering staffs of several leading manufacturers, including the Barrett Company, Joseph G. Pollard Co. and Pomona Pump Co. He is a member of many professional organizations.

Mr. Clark assumed his new duties at the beginning of May with the setting up of headquarters in Rooms 3701-2 at 22 East 40th St., New York.

In accepting the position of Secretary-Manager, Mr. Clark fills a position provided for by the new constitution and by-laws adopted by the Manufacturers Association last July. Founded in 1908 as the Water Works Manufacturers Association and for the past 33 years having full charge of all manufacturers' participation in the A.W.W.A. and other

(*Continued on page 19*)



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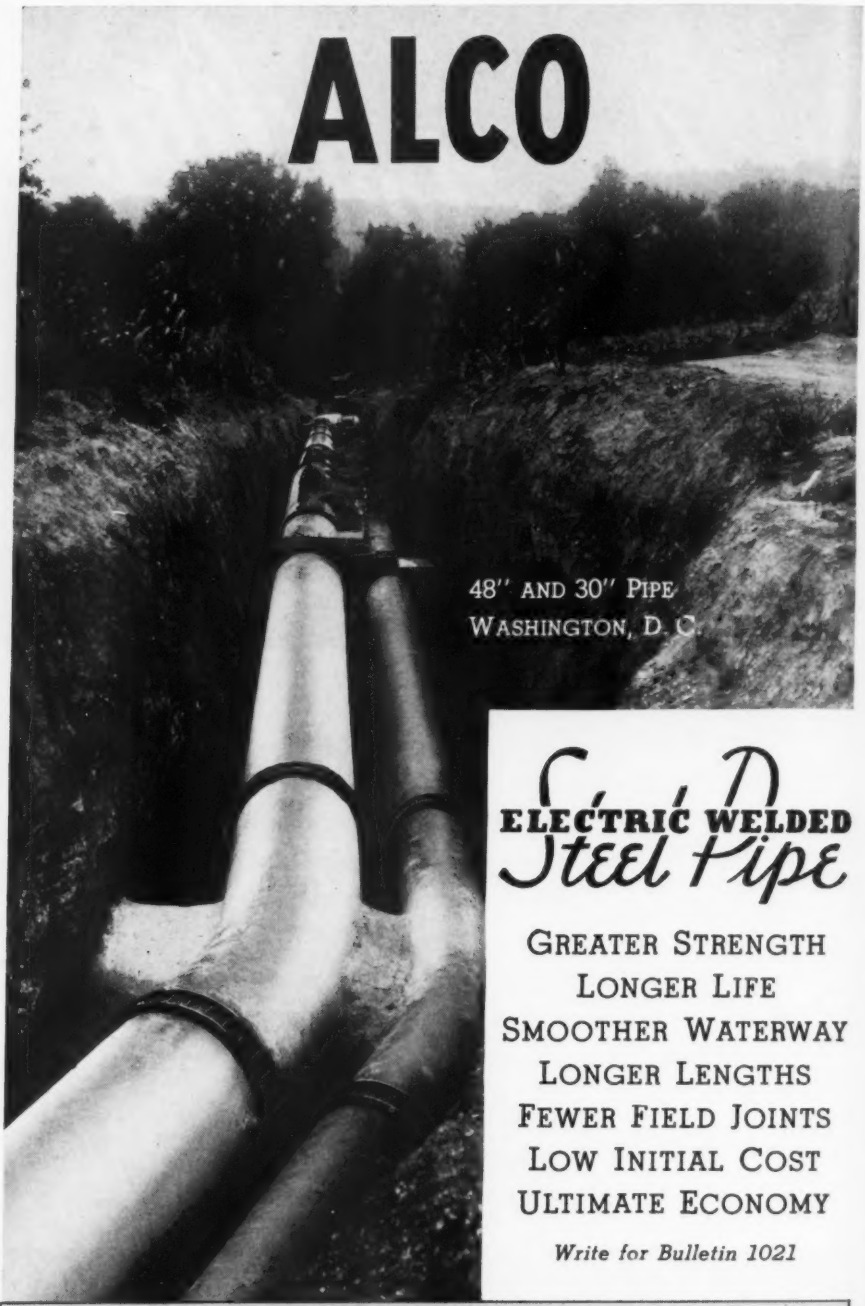

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(*Continued from page 16*)

water works conventions, it was only within the past year that the activities of the Association were expanded to include the rapidly developing sewage disposal field.

E. B. Black, reported in last month's News of the Field as appointed head of the water engineering branch of the Quartermaster Corps of the U. S. Army, has now resigned due to a new policy prohibiting the employment as consultants of engineers whose firms hold contracts with the construction division of the Quartermaster Corps. Earnest Boyce, Chief Engineer and Director of the Division of Sanitation of the Kansas State Board of Health, has been appointed to take Mr. Black's place. Mr. Black will remain with the firm of Black & Veatch.

The rule has not been interpreted to cover engineers associated with firms having contracts with other than the construction division of the War Dept.

Lloyd K. Clark, Director of the Division of Sanitary Engineering of the North Dakota Dept. of Health, has been called for military duty.

(*Continued on page 20*)

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(*Continued from page 19*)

He is Secretary-Treasurer of the North Dakota Water and Sewage Works Conference and is an Active Member of the A.W.W.A. He read a paper on corrosion control at the Montana Section Meeting in 1940.

Harry D. Hanson, Assistant Director of the Division, has received the assignment to carry on Mr. Clark's work.

A.W.W.A. Members who are registered for Selective Service and who are planning to attend the Toronto Convention will be interested in the following quoted Opinion No. 1 of the National Headquarters of the Selective Service System on the subject "Permit to Leave United States":

Facts: Under Paragraph 161 of the Selective Service Regulations, the local board may issue to a registrant a permit to leave the United States (D.S.S. Form 351), provided that the registrant's absence is not likely to interfere with the proper administration of the Selective Service Law. Under Paragraphs 161 and 323 of the Regulations, a local board may require a registrant to file his completed questionnaire before it issues a permit to leave the United States. Under Paragraph 323, the local board in such a case may thereupon classify such registrant if that appears necessary to a determination of the advisability of issuing the permit.

(*Continued on page 22*)

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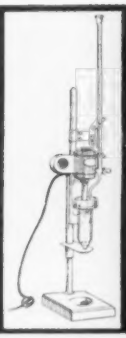

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(*Continued from page 20*)

"*Question 1.*—Does the Selective Service System require a registrant to secure a permit before leaving the United States?

"*Answer.*—No. A registrant leaving the United States is at liberty to secure a permit or not, as he sees fit, but if he fails to do so and thereby becomes delinquent, he will be subject to the penalties of the Act. The provision for the permit is for the registrant's protection, and the protective features should be emphasized, pointing out the responsibility on the registrant to keep in touch with his local board, to fill out proper papers when requested, and to report for induction when directed. If the registrant contemplates being out of the United States, it is advisable for him to secure a permit.

"*Question 2.*—May other organizations, as a matter of policy, require that a registrant have a permit from his local board as a condition precedent to their approval of his leaving the United States?

"*Answer.*—Yes. Private organizations, such as employers, unions, steamship lines, and others in a similar relationship to a registrant, may require him to have a permit from his local board as a condition precedent to their approval of such registrant's departure from the United States.

(*Continued on page 26*)

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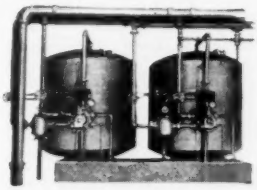

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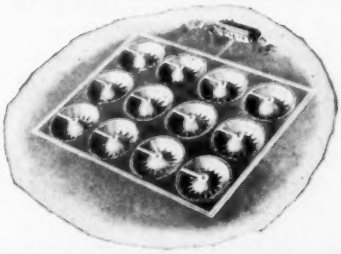

Let Permutit work with your engineers to solve *your* water problem. Write to The Permutit Company, Dept. G2, 330 West 42nd Street, New York, N. Y.

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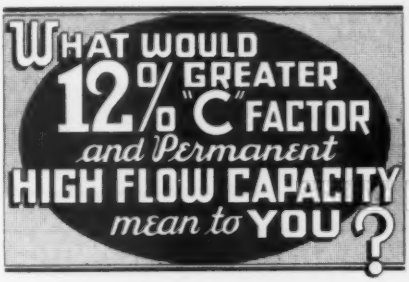

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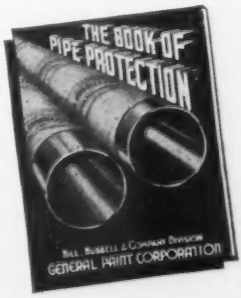

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(*Continued from page 22*)

Such organizations might well determine that they would not wish to be put in a position where, in a number of successive cases, persons intending to avoid the obligation of training and service might use the facilities of such organizations as a means of getting out of the jurisdiction of the United States. Section 11 of the Act provides heavy penalties for one who knowingly counsels, aids, or abets another to evade any of the requirements of the Act or of the rules, regulations, or directions made pursuant thereto. A company or union might actually be put in an embarrassing position through carelessness or even as a result of completely innocent inattention in cases where the circumstances would be such as to make the appearance of innocence difficult if such company or union should be prosecuted.

"*Question 3.*—May local boards issue permits for travel to territories of the United States?

"*Answer.*—Yes. In view of the provision in Section 15 (b) of the Act that the term "United States," when used in a geographical sense, shall be deemed to mean the several States, the District of Columbia, Alaska, Hawaii, and Puerto Rico, a local board may issue a permit to a registrant to go to a territory of the United States, or even to visit another State if his trip will take him outside the geographical limits of the United States.

"*Question 4.*—What local board is authorized to issue a permit?

"*Answer.*—The only local board which may issue a permit is the board which has jurisdiction of the area in which the address on line 2 of the registrant's registration card (D.S.S. Form 1) appears.

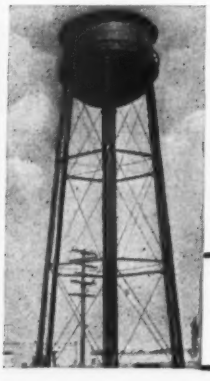
"*Question 5.*—To whom may a registrant appeal if a permit is refused?

"*Answer.*—There is no appeal. The decision of the local board is final.

"*Question 6.*—Does the registrant have to appear before his local board in order to secure a permit?

"*Answer.*—Application may be made by mail, telegraph, or telephone, if the local board approves such procedure.

(*Continued on page 28*)



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QUIGLEY TRIPLE-A PROTECTIVE COATINGS are technical products made to give real protection under conditions that quickly destroy paints. Thousands of plants use TRIPLE-A Protective Coatings for better protection, less maintenance and longer life for steel-work. Each TRIPLE-A Coating has distinctive properties and applications. Nos. 10, 20, 32 and 44 CAN BE APPLIED ON DAMP SURFACES. Impressive service records in worldwide installations offer proof of the merits of TRIPLE-A.

Write for Bulletin #375

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Makers of Hytempite

Distributors with Stocks and Service in Important Industrial Centers Throughout the United States, Canada, and in 32 Other Countries.

1879—ROSS—*1879*

AUTOMATIC VALVES

Controls elevation of water in tanks, basins and reservoirs

ALTITUDE VALVE

1. Single Acting
2. Double Acting

Maintains desired discharge pressure regardless of change in rate of flow

REDUCING VALVE

Regulates pressures in gravity and pump systems; between reservoirs and zones of different pressures, etc.

Maintains levels in tank, reservoir or basin

1. As direct acting
2. Pilot operated and with float traveling between two stops, for upper and lower limit of water elevation.

FLOAT VALVE

A self contained unit, with three or more automatic controls

COMBINATION VALVE

Combination automatic control both directions through the valve

Maintains safe operating pressures for conduits, distribution and pump discharge

SURGE-RELIEF VALVE

Electric remote control—solenoid or motor can be furnished

REMOTE CONTROL VALVE

Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Packing Replacements for all Ross Valves Through Top of Valve

ROSS VALVE MFG. CO., INC., P. O. BOX 593, TROY, N. Y.

(*Continued from page 26*)

"*Question 7.*—For what purposes may permits be issued?

"*Answer.*—This is a matter solely within the discretion of the local board. However, local board members who are considering the advisability of granting to a particular registrant a permit to leave the United States should be particularly careful that they do not counsel, aid, or abet the registrant in evading service in the land or naval forces or in evading any of the requirements of the Act or of rules, regulations, or directions made pursuant thereto and thus become subject to the penalties provided by Section 11 of the Act.

"*Question 8.*—Can a blanket permit be issued to include all members of an organization?

"*Answer.*—No. Permits must be issued to individuals.

"*Question 9.*—May one permit be issued to a registrant to cover more than one departure from the United States?

"*Answer.*—Yes.

"*Question 10.*—Can a permit be issued for an indefinite period of time?

"*Answer.*—No. As provided in D.S.S. Form 351, the period of absence must be designated in the permit."

(*Continued on page 30*)

For Underground Service Lines

ANACONDA COPPER and RED-BRASS

Anaconda Copper Tubes in straight lengths and coils... Anaconda "85" Red-Brass in straight lengths only — both are products of dependable quality. Made by the world's largest and most experienced manufacturer of copper and brass, and stocked by leading supply houses.

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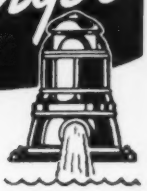
THE AMERICAN BRASS CO.

General Offices: Waterbury, Connecticut

Built to Serve Longer



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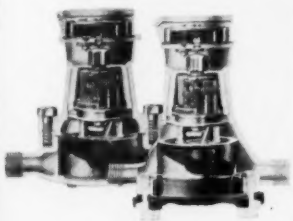
LAYNE WELLS & PUMPS

TRIDENT *Interchangeability* MEANS

Utmost in Revenue

Are Your Water Revenue Dollars Slipping Away at Low Rates of Flow?

Number 5 of a Series



TRIDENT INTERCHANGEABILITY

means

ECONOMY IN INVENTORY

EFFICIENCY IN MAINTENANCE

RELIABILITY IN PERFORMANCE

ASSURANCE AGAINST RETIREMENT

UTMOST IN REVENUE

MORE AND MORE, throughout the country, water departments are striving to have their repaired meters test 100% accurate so they can increase their revenue from low rates of flow. Your shop may have meters of several makes, many of which will meet stiff tests; but it is only when the great majority of them will record accurately at low flows that you can afford to raise your repaired meter standards and snare this additional income.

● "New Meter Performance," (which means accuracy at low flows) is the goal of the repair shop, and comes closer to realization through Trident Meter interchangeability. Up-to-date and accurately machined Trident parts will fit any Trident Meter, no matter how old. With standardization on Tridents you can raise and keep your repaired meter standards high—you can achieve your maximum revenue.

61ST ANNUAL MEETING AWWA JUNE 22-26 1941 ROYAL YORK HOTEL TORONTO CANADA

NEPTUNE METER COMPANY • 50 West 50th Street • NEW YORK CITY

Branch Offices in CHICAGO, SAN FRANCISCO, LOS ANGELES, PORTLAND, ORE., DENVER, DALLAS, KANSAS CITY, LOUISVILLE, ATLANTA, BOSTON.

Neptune Meters, Ltd., 345 Sorauren Avenue, Toronto, Canada

(*Continued from page 28*)

The Ohio River Pact, providing for interstate control of pollution of the Ohio River, awaits only ratification by the Pennsylvania Legislature for it to become effective, since Ohio and West Virginia have agreed to ratify if Pennsylvania does. Kentucky, Illinois, Indiana and New York have already ratified the pact unconditionally. Ratification by five states is necessary.

By defining stream pollution in bacteriological and chemical terms, a proposed law before the Texas Legislature aims to aid enforcement of measures to abate stream pollution. Inadequately treated city sewage and wastes from oil fields and industrial plants are said to have created in Texas some of the nation's worst conditions of stream pollution.

A $4,700,000 plan for collecting sewage from southern Macomb and Oakland counties in Michigan and passing it into Detroit's municipal sewage disposal plant has been approved by the Michigan State Stream Control Commission. Designed to help solve the sanitation problem created by increasing numbers of defense industry workers, the plan con-

(*Continued on page 32*)

STOP RUST
with
RUSTOP

Cathodic Protection ends rust
•
Cleans old tanks
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Keeps new tanks clean
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No paint—No taste
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Write for estimate

ELECTRO RUST-PROOFING Company
29 W. Apple Street
Dayton, Ohio

IN CASE OF FIRE

Another Reason for Rensselaer Quality

A transverse and deflection test of a Cast Iron Bar on a Riehle Testing Machine.

Tests are made daily of all Iron and Bronze used in Rensselaer Valves, Hydrants and other Products, to maintain QUALITY of the highest standards.

Buy RENSSELAER for QUALITY

Make your plans to attend the 61st Annual Meeting of the American Water Works Association, Toronto, Ontario, Canada the week of June 22 to 26, 1941.

RENSSELAER VALVE CO.

TROY, N. Y.

(*Continued from page 30*)

tains a request for special federal funds to cover 40 per cent of the amount normally contributed by a W.P.A. sponsor, thus reducing the cost to the local area to about 15 per cent of the total.

Recommended in the plan is the creation of county sanitary districts working through W.P.A. The proposal also includes provision for carrying all untreated sewage from the area into a new 60-inch tunnel, then metering and pumping into the Detroit sewer system.

"American 125 and 250 Lb. Cast-Iron Screwed Fittings Standard" (ASA B16d—1941) was approved on March 3, 1941, by the American Standards Association. The A.W.W.A. representatives on A.S.A. Committee B16 which developed this standard were Frank A. Barbour, Hydraulic and Sanitary Engineer, Boston, Mass., and William W. Hurlbut, Engineer of Water Works at Los Angeles. The pressure designations are the recommended maximum saturated steam service pressure ratings (gage) of 125 and 250 lb., respectively, and the recommended maximum hydraulic service pressure ratings (including shock) are 175 lb. and 400 lb. per sq. in. (gage), respectively, at or near the ordinary range of air temperature.

(*Continued on page 34*)

LARGEST PRODUCTION FACILITIES

of any Cast Iron Pipe foundry in America. Daily capacity more than 40,000 feet.

LARGEST CENTRIFUGAL PIPE

of any Cast Iron Pipe foundry in America. Complete line of sizes, *including 48-inch.*

BROADEST SELECTION OF JOINTS

for special services of any Cast Iron Pipe foundry in America. "Acipco" has pioneered in developing Cast Iron Pipe for fields of *super-service.*

Whatever your piping problem, refer it to "Acipco" and rest assured of conscientious assistance from an organization backed by 36 years of experience in producing highest-quality Cast Iron Pipe and Fittings. Address "Acipco" office nearest you.

AMERICAN CAST IRON PIPE CO.
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Filter Sand and Gravel

WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.

PROMPT SHIPMENT IN BULK OR BAGS OF 100 LBS. EACH.

Inquiries Solicited.

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The Manual of Water Works Accounting

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$3.20 to A. W. W. A. Members
for cash with order

Write today

American Water Works Assn.
22 East 40th Street, New York

"Skyscraper" WATERWORKS

TOWN OF LAKE, WISCONSIN

Plan to attend 61st meeting of A. W. W. A.—Toronto, Ont., June 22nd—26th.

Used **HTH** to sterilize million gallon system

● One of the most unusual municipal buildings in the country is located in Town of Lake, Wisconsin. What appears to be a "skyscraper" building is actually a concrete enclosed steel water tank . . . at the base of which is located the water department, softening plant, pump room, and other offices pertaining to municipal management.

Designed by William D. Darby, consulting engineer, this modern waterworks is supplied by well water which is stored in the enclosed tank. The distribution system consists of 43 miles of mains of various sizes, and holds about 250,000 gallons when in static condition.

The entire waterworks, including a 40,000-gallon settling tank, was sterilized with Sanitation HTH before actual operations were begun. Using 50 p. p. m. of available chlorine 1,050 lbs. of HTH were required for this thorough sterilizing operation. Reports Engineer Darby, "We obtained very satisfactory results."

HTH comes in 5-lb. cans with replaceable caps, packed 9 cans to the case; also in 100-lb. drums.

Sanitation HTH is a dry, free flowing carrier containing more than 70% available chlorine. Many waterworks engineers keep it on hand for sterilizing new or repaired mains and for any and all emergencies requiring a mobile high test chlorine carrier. Send for 80-page booklet: "Hypo-Chlorination of Water."

THE Mathieson Alkali Works (INC)

60 EAST 42ND STREET, NEW YORK, N. Y.

LIQUID CHLORINE . . . HTH . . . SODA ASH . . . CAUSTIC SODA . . . BLEACHING POWDER . . . AMMONIA, ANHYDROUS and AQUA . . . BICARBONATE OF SODA . . . PH-PLUS (FUSED ALKALI) . . . DRY ICE . . . CARBONIC GAS . . . SYNTHETIC SALT CAKE . . . SODIUM CHLORITE PRODUCTS

(*Continued from page 32*)

After defining the above pressure ratings, the introductory notes cover material under the following headings: size, marking, material, metal thickness tolerance, threading, ribs, and fitting dimensions.

In tabular form are presented specifications for the following fittings (125 lb.) of the designated ranges of nominal pipe sizes: 90- and 45-degree elbows, tees, and crosses (straight sizes) from $\frac{1}{4}$ in. to 12 in.; elbows (reducing sizes) from $\frac{3}{4}$ in. x $\frac{1}{2}$ in. to 8 in. x 6 in.; crosses (reducing sizes) from $\frac{3}{4}$ in. x $\frac{1}{2}$ in. to 6 in. x 4 in.; tees (reducing) from $\frac{1}{2}$ in. x $\frac{1}{2}$ in. x $\frac{3}{4}$ in. to 8 in. x 6 in. x 6 in.; reducing couplings from $\frac{1}{2}$ in. to 8 in.; and caps from $2\frac{1}{2}$ in. to 12 in. The 250 lb. standard for cast-iron screwed fittings covers only the straight sizes of 90- and 45-degree elbows, tees, and crosses for nominal pipe sizes from $\frac{1}{4}$ in. to 12 in.

An appendix covers dimensions of pipe bushings (ASA B16c—1939) for sizes from $\frac{1}{4}$ in. x $\frac{1}{8}$ in. to 12 in. x 6 in.

This standard (B16d—1941) is available from the American Society of Mechanical Engineers, 29 West 39th St., New York, N. Y. at the price of 40 cents per copy.

(*Continued on page 36*)

The Ford Copperhorn
MAKES AN IDEAL SETTING FOR METERS IN BASEMENTS

The COPPERHORN permits installing a water meter at the desired height in a vertical pipe. It provides an all-copper water way and maximum flow through the meter. It holds the customer's pipe connected and takes the curse out of meter changing. Let us tell you more about the COPPERHORN.

The Ford Meter Box Co.
WABASH, INDIANA

Know any other JOINTING COMPOUND THAT CAN MATCH THIS?

In a test to see what *Tegul*-MINERALEAD Joints could really stand, we rigged a power hammer carrying a 50 lb. iron "head" and actuated by a cam. In fifteen hours this device rained 90,000 smashing impacts on two 12′ lengths of 4″ pipe jointed with *Tegul*-MINERALEAD and forming a span 19′ between supports • 90 lbs. water pressure was maintained in the pipe and, at the end of this tough test, there wasn't even a sign of a leak • *Your* pipes will never have to take such punishment but, jointed with *Tegul*-MINERALEAD, they'll take everything that comes their way • Write for more information about the many advantages of this sulphur-base, quick-sealing jointing compound which comes in ingot form • The Atlas Mineral Products Company of Pennsylvania, Mertztown, Penna.

Tegul MINERALEAD
For Jointing BELL & SPIGOT PIPE

NATIONAL METER COMPANY *Established 1870*

4207 FIRST AVENUE, BROOKLYN, N. Y.

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LOS ANGELES

Manufacturers of
EMPIRE
NASH
CROWN
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EMPIRE-COMPOUND
WATER, OIL AND GASOLINE METERS

OFFICE OF
N. J. KENNY, PRESIDENT

March 17, 1941.

To Our Many Friends:

To better serve the Water Works Trade has been our constant endeavor. That our efforts have been rewarded by increased sales, particularly during the past two years, not only makes us duly grateful but imposes on us the responsibility of developing, to a greater extent, our capacity to meet your requirements in the future.

With this purpose in mind we have effected, as of today, a reorganization by which the National Meter Company will operate as a division of the Pittsburgh Equitable Meter Company, making available to our friends, the facilities of both Companies and the most complete line of liquid meters ever marketed by any manufacturer.

The sales organization which you have known for so many years will continue to take care of your needs and, with the resources of the Pittsburgh Equitable Meter Company at your command, will render you better service than ever. They are fully qualified by training and experience to advise you on your metering problems.

To all who have made the success of National possible we send our sincere thanks and promise to the best of our ability, to merit your continued endorsement.

N. J. Kenny
President National Meter Company
Division of Pittsburgh Equitable Meter Company

SEE US AT THE 61st AWWA TORONTO Convention

Empire METERS

(Continued from page 34)

A summer program in public health engineering, with particular reference to water, sewage, and camp sanitation, has been announced by the Dept. of Biology and Public Health at Massachusetts Institute of Technology. Subjects given will be: civil and military sanitation, sanitary bacteriology, sanitary biology, and sanitary chemistry. Requests for information regarding this program should be addressed to Professor M. P. Horwood, Room 10–439, Massachusetts Institute of Technology, Cambridge, Mass.

The National Fire Protection Association has issued as Part 2 of its April *Quarterly* a complete set of all preprinted reports to be given at its Forty-Fifth Annual Meeting at the Royal York Hotel at Toronto, May 12–16. A report which may be of special interest to water works men is one of 12 pages on the protection of records.

The Municipal Year Book for 1941 has been issued in April by The Municipal Year Book, 1313 East 60th St., Chicago. A book of 600 pp., it contains no advertising, is bound in cloth and sells for $5 postpaid. It

(Continued on page 38)

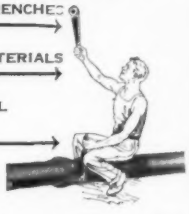
3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.



For water supply, fire protection systems, sewage disposal systems, industrial, and irrigation. Flexible.

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THE CENTRAL FOUNDRY COMPANY
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Gentlemen: Send us information and catalog on UNIVERSAL CAST IRON PIPE.

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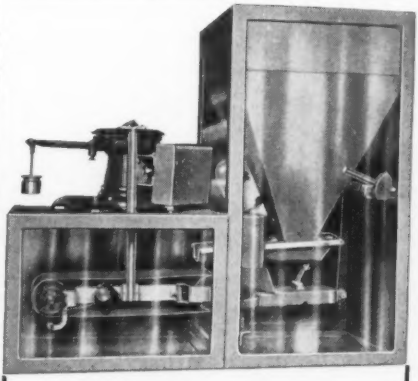

The accurate way to feed dry chemicals is *by weight*

SYNTRON

"Weigh-Flow"
Dry Feeder Machine

eliminates all guess work—and feeds exactly the right amount—by weight

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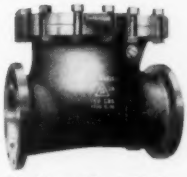
428 Lexington Ave. Homer City, Pa.

Prevent Water Contamination..

Eliminate Waste



Uniflow Check Valve

Detector Check with Meter in By-Pass

Grinnell Uniflow Check Valves – used in pairs in public water service pipes to private fire systems – are the sure efficient way to prevent water from a secondary source backing up in public mains and causing contamination. Valves are all bronze, with bronze clappers and moulded rubber facings.

Grinnell Detector Check Valve prevents leaks or misuse of water in fire protection equipment. By-pass and meter accurately measure flows to slightly over 25 gallons per minute. Iron body is bronze mounted with moulded rubber facings.

These valves are made to specifications approved by Factory Mutual Laboratories, and Underwriters' Laboratories, Inc. Write today for Grinnell catalog "Water Works Specialties" giving complete details on fittings, clamps, valves and specialties for Water Works. Grinnell Company, Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities.

SOCKET FITTINGS BY

GRINNELL

WHENEVER **PIPING** IS INVOLVED

(*Continued from page 36*)

contains more than 100,000 statistical facts about 2,042 cities over 5,000, contributed by 4,000 public officials and 200 other authorities. It contains the 1940 U. S. census figures and data on all municipal departments, personnel, ordinances, etc. Eighty pages are devoted to listing sources of information on all municipal activities.

Miami, Fla., sold on March 24, 1941, $7,663,000 water revenue bonds maturing from 1941 to 1969 bearing coupon rates from $1\frac{3}{4}$ per cent to 3 per cent at a net interest cost to the city of about $2\frac{3}{4}$ per cent. Issuing of the bonds and the public relations involved in the matter were handled by A. E. Fuller, Miami's Director of Finance.

"The Role of Standards in the System of Free Enterprise" is a 12-page supplement issued as Part 2 of the April ***Industrial Standardization and Commercial Standards Monthly*** published by the American Standards Association. Subtitled "A study of voluntary standards as alternative to Legislative and Commission control," the document is of added interest when it is noted that it was prepared at the request of the Temporary National Economic Committee.

The South Dakota Water Works School will be held May 26–28 at the State University of South Dakota, Vermillion, S. D. Further information is available from W. W. Towne, Director of the Division of Sanitary Engineering, State Board of Health, Pierre, S. D.

Exclusion of the general public from the sources of New York City's water supply has been proclaimed until March 31, 1942, by extension of an original proclamation made by New York State's Governor Herbert H. Lehman on September 28, 1940. Areas affected are in Westchester, Ulster, Scoharie, Delaware, Greene and Putnam counties, the Catskill

(*Continued on page 40*)

W. F. Goble, of San Marino, Calif., Manager of the California Water & Telephone Co., died on April 5. Mr. Goble had been active in the California Section for many years and had been an Active Member of the A.W.W.A. since 1926.

Trade Mark MABBS Reg. U. S. Pat. Off.

PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

MABBS RAWHIDE PACKING

on your Water Works and Sewage pumps and valves. Practically antifrictional, it saves enough in POWER to pay for itself in a short time. For over 45 years Mabbs Rawhide Packing has proven its superiority over other packings for these purposes.

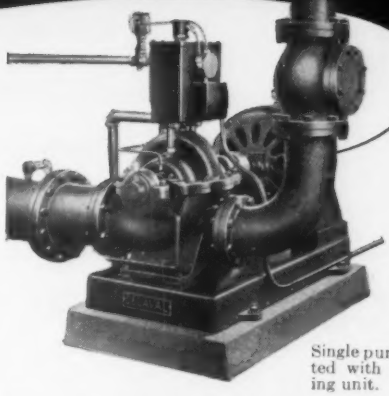
Why not use it in your plant and benefit thereby?

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892*, 431 S. Dearborn St., Chicago, Ill.

These three De Laval 50 m. g.d. motor-driven pumps in the Ward Station, Buffalo, are kept primed at all times by a De Laval automatic priming system.

Automatic

PRIMING SYSTEMS for DE LAVAL PUMPS



Single pump fitted with priming unit.

THE De Laval Submerged Suction Priming System automatically keeps the water in the supply line and all connections on the suction side of one or a number of centrifugal, mixed flow or propeller pumps above the eye of the impeller at all times, just as if the pumps were actually located below the supply.

Normally, discharge begins immediately a pump is started, but if for any reason the priming should be lost, as from a break in the suction line, the pump is at once shut down; it is impossible to run the pump unprimed.

Where two or more pumps are near together, the different pumps in the group can have different suction lifts, as each pump, once primed, is isolated from the central vacuum reservoir. However, where water is drawn from wells it is usual to connect a chamber in the suction line to permit separation of air and settling of sand before the water passes to the pumps and all pumps served by the system will have the same constant submergence, thereby avoiding surges.

With pumps for liquids carrying solids in suspension, such as sewage or paper stock, the suction main is extended vertically above the pump suction to a level not reached by the liquid. Should the level in the submerged chamber drop to a certain point through accumulation of gases, the vacuum pump is started, and should it drop still lower the main pump is shut down until the excessive inleakage of air, or other trouble, is corrected.

The De Laval Submerged Suction Priming System is protected by patents and is available only for use with De Laval pumps.

For further particulars see Publication M-16, sent upon request.

DE LAVAL STEAM TURBINE CO. TRENTON, N. J.

Attend 61st Annual Meeting of the American Water Works Association at Toronto, Ontario, June 22 to 26, 1941

(*Continued from page 38*)

and Croton systems being located in these counties and furnishing about 90 per cent of the city's supply.

All permits for fishing and boating in the city's water supply sources were revoked by Mayor Fiorello H. La Gardia on September 30, 1940. Permits were reissued beginning October 16, 1940, under new regulations promulgated by Joseph Goodman, Commissioner of Water Supply, Gas and Electricity. Substantially the same provisions will obtain until March 31, 1942, when the present emergency proclamation terminates. At present to obtain a permit, an applicant must show that he is a citizen, a resident of New York State, at least sixteen years of age, and that "he is a fit and proper person to have access to the open or unrestricted portions of the lakes, reservoirs and lands of the city." He must furnish two photographs and have his fingerprints taken by the officer issuing the permit. Permit holders may fish or boat upon city property only during daylight and cannot enter certain prohibited areas which extend from 500 ft. to 1,500 ft. from dams of auxiliary reservoirs and considerably farther from the conjunction of the Croton and Catskill waters.

(*Continued on page 42*)

CLEAN YOUR WATER MAINS

One does not have to be an expert mathematician to figure out that a clogged water main calls for a stronger pressure and that in turn calls for more coal—and literally burning up money. We can show you how to get dollar for dollar value out of every ton of coal. We can show you how to clean the water mains quickly and cheaply. Send us your address—that's all we ask of you.

National Water Main Cleaning Co.

30 Church St., New York, N. Y.

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CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
facilitating prompt shipment.

Flanged Pipe

Special Castings

Flexible Joint Pipe

Bell and Spigot Pipe

Warren Spun Centrifugally Cast Iron Pipe

Short Body B. & S. Specials

Warren Foundry & Pipe Corp.

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Sales Offices
11 BROADWAY, NEW YORK, N. Y.
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Works
PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 40*)

Lewis B. Smith has been appointed Superintendent of Water at Rochester, N. Y. Mr. Smith has been in charge of park improvement for the Genessee County Highway Dept. and is a water works and public works engineer of long experience.

A conference on hydrology is to be held at State College, Pennsylvania, from June 30 to July 2, 1941, under the joint sponsorship of the Section of Hydrology of the American Geophysical Union, the Civil Engineering Division of S.P.E.E., the Committee on Hydrology of the American Society of Civil Engineers, and The Pennsylvania State College.

The conference program is subdivided into five symposia under the headings: the scope of applied hydrology, rainfall and runoff, delays in the hydrologic cycle, losses in the hydrologic cycle, and flood problems. The last half day of the conference will be devoted to round-table discussions of hydrology and its engineering applications. Program arrangements are under the direction of F. T. Mavis, Head, Department of Civil Engineering, The Pennsylvania State College, and a national advisory committee of which L. G. Straub, Director of the St. Anthony Falls Hydraulic Laboratory of the University of Minnesota, is chairman.

Inquiries regarding the conference may be addressed to F. T. Mavis, State College, Pa.

The village of Gardner, Ill., population slightly less than 900, began efforts in 1924 to obtain an adequate water supply for fire protection and domestic use. A well was sunk as a result of this effort, but the water proved to be unsatisfactory and the project was abandoned—at least temporarily.

A new start was made in 1938 and application was made to the Public Works Administration for funds to build a water supply system. Again the residents of Gardner were disappointed. Their application was approved but Public Works Administration funds were exhausted before allocation was made for the Gardner water supply system.

Fourteen years elapsed and the people of Gardner were twice disappointed before the city authorities applied for funds from the Work Projects Administration. Persistence was rewarded and the W.P.A. project was placed in operation, the funds providing for the long needed water system and also giving work to needy unemployed in the community.

Today, the project completed, Gardner has a municipally owned water supply system which provides for domestic needs and assures adequate water for fire protection. The new water system, built at a cost of more then $80,000, is modern in every respect, including the 50,000-gallon watersphere that combines functional utility with attractive design.

(*Continued on page 44*)

WATCH DOG
WATER METERS
. . . built to give
LASTING SATISFACTION
The Worthington-Gamon Meters of today represent an experience of 85 years . . . dating back to the invention of the piston meter, in 1855, by Henry R. Worthington.
With 3,650,000 meters now serving thousands of communities, this organization offers to municipalities and water companies a product whose accuracy and low maintenance requirements have proved it to be a sound investment.
Write for literature.
WORTHINGTON-GAMON METER COMPANY
General Offices: HARRISON, NEW JERSEY
District Sales Offices and Representatives throughout the United States
WORTHINGTON-GAMON

WG1-2A

(*Continued from page 42*)

The Gardner water supply project was built by the W.P.A. in cooperation with a private contracting firm, the Chicago Bridge and Iron Co. This is an example of the W.P.A.-contractor arrangement which has proved to be so successful in many localities.

Involved in the construction were about 40,000 ft. of water mains, the watersphere, installation of service connections, construction of foundations required, and other work.

The new Dresser Bellmaster Joint, Style 85, is described in a new 8-page, two-color catalog just issued by Dresser Mfg. Co., Bradford, Pa. Installation advantages and construction features claimed for the new product are: low in first cost, faster and easier to install, simple and compact.

It is a single-gasketed, self-contained mechanical joint designed for strength, flexibility and resistance to corrosion. It consists of an inner ring, armored gasket, outer ring and a set of capscrews—all factory assembled into a single unit. This joint is installed by inserting it in the bell end of the pipe prepared to accommodate the joint, locking it in place by twisting it slightly clockwise, "stabbing in" the spigot end and tightening the capscrews. The working principle is reported simple and effective: as the capscrews are tightened the inner ring is drawn closer to the locked outer ring, thus expanding the gasket against the outside of the spigot and against the inside of the bell to make a tight seal against both.

The joint is currently available in the following cast-iron pipe sizes: 4-, 6-, 8-, 10-, 12- and 16-inch; leading cast-iron pipe manufacturers can furnish pipe with bell ends suitable for these joints.

Airfoil sections used in modern airplane wings are being commercially applied to deep well and propeller pumps, according to an announcement of the Peerless Pump Div. of the Food Machinery Corp. While the thicker vane sections are reported to increase the cost somewhat, higher efficiencies and better pump life are said to offset this many fold.

Calgon, Inc., Pittsburgh chemical engineers and manufacturers of sodium phosphate for industrial and domestic uses, have announced the opening of a branch office in Detroit—2512 Book Bldg. Robert Graf is in charge of the Calgon sales and service.

The new office will also serve as Michigan branch headquarters for the Hagan Corp. and The Buromin Company, parent and sister companies, respectively, of Calgon, Inc. Arthur R. Borden will manage Hagan, Hall Service and Buromin activities with respect to automatic combustion control and boiler water conditioning applications. Messrs. Borden and Graf will be assisted by W. H. Weitzel.

(*Continued on page 46*)

WATER-BORNE
OUTBREAKS
in the
UNITED STATES
and
CANADA

1920–1936

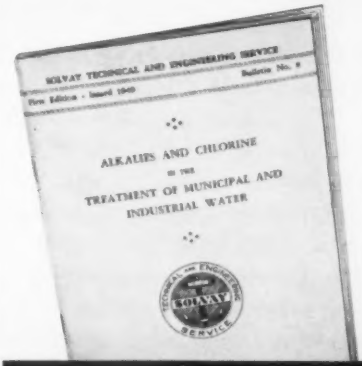
by
Arthur E. Gorman
and
Abel Wolman

An unparalleled summary of studies concerning the relation of water supplies to typhoid fever, gastro-enteritis, etc.

A brochure that should be in the library of every sanitary engineer.

Price $1.00—postpaid if cash or check accompanies the order.

Sold only by
AMERICAN
WATER WORKS
ASSOCIATION
22 East 40th St.
New York, N. Y.



DID YOU GET YOUR COPY OF THIS VALUABLE REFERENCE BOOK?

This comprehensive survey on water treatment has already become famous. Every water-treatment expert should have it at his fingertips. It describes briefly the various treating processes for water used for both municipal and industrial purposes.

FILLED WITH TABLES AND CHARTS

Bulletin No. 8 is filled with tables, charts, cost comparisons and other specific data which will prove invaluable to water works engineers and industrial operators who treat large volumes of water. Write for Bulletin No. 8 today. You can't afford to be without it!

SOLVAY SALES CORPORATION
40 Rector Street, New York, N. Y.

Kindly send me a copy of your new Solvay Technical and Engineering Service Bulletin No 8, "Alkalies and Chlorine in the Treatment of Municipal and Industrial Water."

Name .....

Affiliated with .....

Address .....

City ..... *State* DN-541

(Continued from page 44)

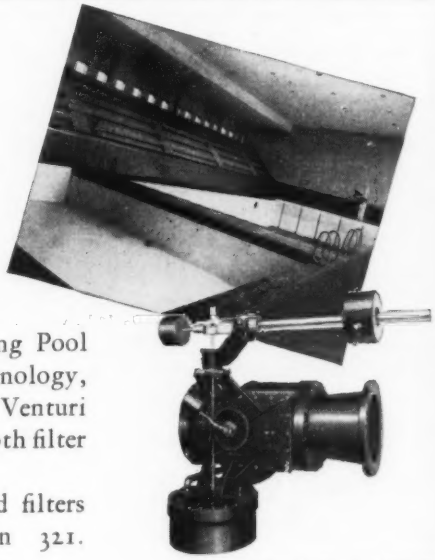
"Adjusting Centrifugal Pump Speed Cuts Operating Costs" is a reprint recently made available by the De Laval Steam Turbine Co., Trenton, N. J. The reprint describes the use of a variable speed coupling between motor and pump to avoid the waste of power usually incurred when throttling to adjust the head. The variable speed coupling permits the development of the head needed, and, although use of the coupling involves some loss of energy it is not as great as that incurred by throttling.

Another reprint recently made available by the De Laval Steam Turbine Co. is "Operation of Centrifugal Boiler-Feed Pumps" by Hans Gartmann, a De Laval engineer. It was a winning paper in an engineering essay contest recently conducted by the Hydraulic Institute.

A new metallizing gun for restoring worn machine parts of all kinds and for applying coatings of zinc to tanks, etc., has been recently brought out by the Metallizing Engineering Co., Inc. of 21–07 41st Ave., Long Island City, N. Y. New features are a "power control unit" to give a uniform wire feed and an improved spraying mechanism to obtain fine coatings at production speed.

BUILDERS *Controller*

FOR FILTER EFFLUENT AND BACKWASH CONTROL



At the new ultra-modern Swimming Pool at Massachusetts Institute of Technology, Cambridge, Mass., a single Type E Venturi Controller automatically regulates both filter effluent and backwash flow.

For new filters or remodeling old filters you'll want a copy of Bulletin 321. Address:

Illustration shows Swimming Pool at Massachusetts Institute of Technology, Cambridge, Mass. Designed by Anderson & Beckwith, Architects, Cambridge.

BUILDERS - PROVIDENCE, INC.
(DIVISION OF BUILDERS IRON FOUNDRY)
Providence, Rhode Island

News of the Field

No period is remembered in American history that has had more dynamic effect upon all ways of living than the present.

Almost a year ago, when the implications of the defense program began to be evident, advice was given to public service executives to put their plants in order. Business leaders of broad vision made it plain that the tremendous defense program was bound to tax the capacity of industry and that consumer goods were likely to be available only on a restricted basis. The significance of this must be clearer now when we learn that next year's automobile production will be cut by at least 20 per cent.

Sometimes it appears that water works men may not have taken the situation as much to heart as might be useful. It is late now to attempt to obtain the reserve equipment and supplies that were advised some time ago. Today the problem is not that of getting reserve material, but of getting things needed for today's operation or for repairing the necessary operating unit. Manufacturers of water works equipment are finding it difficult to obtain basic materials because many of these same materials are being drawn into defense work. Likewise manufacturers of water treatment supplies find themselves put to it to serve their water works customers in the face of defense demands.

Just now the greatest need is for calmness and straight thinking. This need exists not only among the water works men in the smallest towns but extends clear into the offices of defense administrators in Washington. This is not a time for frills nor for whimsies, but it is a time to remember that a healthy America is a well defended America. Safe and adequate water supply will keep America healthy. This Association asks for water works men, and for the water works plants of the country, a reasoned recognition of the part that public water supply plays in modern life and industry. The American public, served by modern water supply, is entitled to this recognition so that it can meet defense needs adequately.

For many weeks, persons who had any part in the work being done to prepare for civilian defense have felt the need of national leadership. Modern war is not a front line matter. It is an all-out affair and no one can expect to be safe against attack in his home or at his work.

Civilian engineers have been at work for months considering the situation as it exists overseas and attempting to apply the lessons learned to the conditions that may develop

(Continued on page 2)

(Continued from page 1)

in North America. Water works men have taken part in these studies. The Association's Journal has brought to its members much information to guide them in meeting problems that may develop.

The President has placed in command of the Civilian Defense, Mayor LaGuardia of New York. A soldier in the last war, a former member of Congress and now Chief Executive of the nation's largest city, LaGuardia is no stranger to anyone. He is noted for his forthrightness, his honesty and his dynamic qualities. For a leader in this new phase of war, the country probably has no one more suited.

It is to be hoped that all civilian groups already working on civilian protection problems will relate themselves wholeheartedly to the Mayor's leadership. It is likewise hoped that the value of the work already done will be recognized and no effort spared to keep at work the various defense councils and special committees that are in a position to make civilian defense effective in the United States. It is an opportunity for team work that must be used to the ultimate degree.

The present attitude of army authorities concerning cantonment water supply personnel appears to follow these lines.

Camp quartermasters are to be in charge of utilities services.

(Continued on page 4)

J. A. MacMillan, for many years Manager of the Office of Commissioners of Sewers and Water Supply of Charlottetown, Prince Edward Island, died recently. He had been a member of the A. W. W. A. since 1927 and was one of the Canadian Section's most active members.

Mr. MacMillan occupied a prominent position in his own town where he was highly respected by all who came in contact with him. He was, in his youth, a conspicuous athlete, and held the maritime championship for 100 yards dash. In discussing his sudden death the local newspaper in its editorial comment expressed the sentiments of the citizens when it said: "When J. A. 'Toby' MacMillan romped over cinder tracks to the tune of maritime championship victories and starred in many other sports, he earned a great reputation as a sportsman and gentleman.

"In later years he retired from the role of an active competitor but his reputation as a gentleman was enhanced every day that he lived.

"He left a shining example for those who must carry on: the example of a great sportsman, a fine gentleman and a true friend."

WHERE TUBERCULATING WATERS MUST BE TRANSPORTED

(LESS THAN 25% OF THE U. S. A.)

USE LINED CAST IRON PIPE*

The areas of the United States where tuberculating waters materially affect the carrying capacity of pipe represent *less than one-quarter of the total area of the country.* If you are located within one of these areas, use *lined* cast iron pipe. You do *not* have to sacrifice the long life, low maintenance cost and salvage value of cast iron pipe in order to be assured of high carrying capacity throughout the life of the pipe you buy. The Cast Iron Pipe Research Association recommends *lined* cast iron pipe where tuberculating waters must be transported. Lined cast iron pipe is the only pipe that will have 100 years of useful life plus 100 year of high carrying capacity. Send for map which shows approximately 76% of the country where little or no tuberculation is to be expected. Lined cast iron pipe is made in sizes from 1¼ to 84 inches.

* *Various types of linings are available to meet various conditions and preferences of users.*

Look for the "Q-Check" Registered trade mark.

The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Illinois

CAST IRON PIPE

PUBLIC TAX SAVER NO. 1

(*Continued from page 2*)

A limited number of City Managers will be commissioned as utilities officers and placed in charge of utility services.

Other officer personnel, now on active duty, qualified for special utility assignments, is being considered for special assignment.

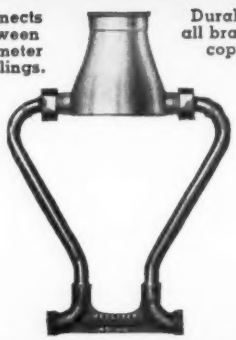
The general policy is to employ civilians to operate water and sewer facilities.

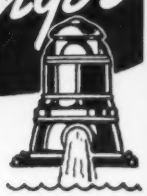
All of this is recorded by a letter from the officer in charge, which reads as follows:

"Reference is made to your letter to me dated May 1, 1941. The information quoted by you is essentially correct.

"In answer to your specific questions, you are advised that the present policy of the Quartermaster Corps is to use civilians in utilities duties with a limited number of officer supervisors. On large posts, where there are special problems or acute water situations, there will be officer personnel assigned other than the Camp Quartermaster in administrative control of such services. This officer in each case will be especially selected because of experience and training for such duty. It is also correct that the operation of water and sewer facilities will be exclusively in the hands of civilian employees selected from the Civil Service register.

(*Continued on page 6*)

The Ford Resetter
AN IDEAL FITTING for RAISING TOO-LOW METERS EASILY
Connects between old meter couplings.
Durable.—all brass and copper.

Improve your old meter settings by installing the RESETTER. Bring your water meters up out of the mud and water so that they are easier to read and take care of. Write for catalog.
The Ford Meter Box Co.
WABASH, INDIANA

Built to Serve Longer

Every part of a Layne Well Water System will stand the heaviest duty; the hardest grind and longest non-stop runs. They are built to stand up—and give you far more than might be expected. Dollar for dollar they will pay greater dividends. Write for Catalogs, Folders and Bulletins. No obligation. LAYNE & BOWLER, INC., Memphis, Tenn.
LAYNE
WELLS & PUMPS

METROPOLITAN WATER DISTRICT of SOUTHERN CALIFORNIA

DORR-EQUIPPED for 100 M.G.D. of SOFTENING

▲
Metropolitan Water District of Southern California, LaVerne, Cal., 100 M.G.D., just before starting operation May, 1941—Consulting Engineers: Hoover & Montgomery, Columbus, Ohio.

FACTS ON THIS PROJECT

Type—Lime-soda process, plus zeolite softeners.
Capacity—100 M.G.D. at present, 400 M.G.D. future.
Location—LaVerne, Cal.; 30 miles east of Los Angeles.
Source Raw Water—Colorado River, from Parker Dam—280 miles from softening plant.
Area to be Supplied—Los Angeles and 12 towns and cities on the south coastal plain.
Raw Water Hardness—300 P.P.M. total (145 P.P.M. carbonate).
Treated Water Hardness—125 P.P.M. total.
Reagents—Lime, alum, soda ash, CO_2, chlorine, activated carbon.

DORR EQUIPMENT

Flash Mixing of Chemicals: 2 Dorrco Flash Mixers—three 27 in. turbo impellers each, rubber covered to resist abrasion.

Flocculation: 2 units of Dorrco Flocculators—200 ft. long, 50 ft. wide, 14 ft. deep—three rows of 12′–6″ paddles per unit.

Sedimentation: 2 Dorrco Square-ex Clarifiers—200 ft. square by 14 ft. side water depth—sludge thickening mechanisms and sludge wells in centers.

For full information on Dorr water treatment equipment, write for our two bulletins, "Flocculation & Mixing" and "Sedimentation".

DORRCO

The DORR COMPANY Inc.
ENGINEERS · 570 LEXINGTON AVE. · NEW YORK
ATLANTA TORONTO CHICAGO DENVER LOS ANGELES

(*Continued from page 4*)

"A limited number of City Managers have been offered appointments to serve as Utilities Officers at some of the posts and stations throughout the country. Other officer personnel now on active duty, who possess the necessary qualifications for special utilities assignments, are being considered for transfer to or detail with the Quartermaster Corps for utilities assignment, but no enlisted men are to be used for such duties.

"Your interest in utilities problems in the Army is greatly appreciated and your assistance in supplying lists of officers and civilians possessing special qualifications has been extremely valuable in the initial selection of personnel to be sent to posts and stations requiring specialists."

The New Jersey Section held an inspection and luncheon meeting on May 22. In the morning the United States Pipe & Foundry Co. plant at Burlington, N. J., was inspected, numerous small groups being shown the testing and manufacturing processes. In the afternoon, the New Jersey water works men took advantage of a similar inspection opportunity to see the R. D. Wood Co. foundry at Florence, N. J.

Charles B. Green, Superintendent of the Florence Township Water Works, supplied the guiding hand which made available an excellent

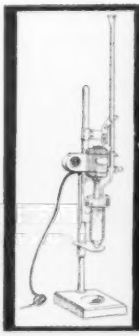
(*Continued on page 8*)

WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL—PROCESS
RAILROAD—MUNICIPAL—HOUSEHOLD

FILTERS Of All Types *and* Capacities . . . Gravity . . . Pressure
SOFTENING SYSTEMS
All Types *and* Capacities—Zeolites (*synthetic and natural*) and Lime and Soda
CHEMICAL FEEDERS (wet or dry)
Acids . . . Hypochlorites . . . Alkalies
EQUIPMENT FOR REMOVAL
Of Iron . . . Taste . . . Odors . . . Colors . . . Suspended Matter
SWIMMING POOL EQUIPMENT
AERATORS · DE-GASIFIERS
WATER TEST SETS
RE-CARBONATORS

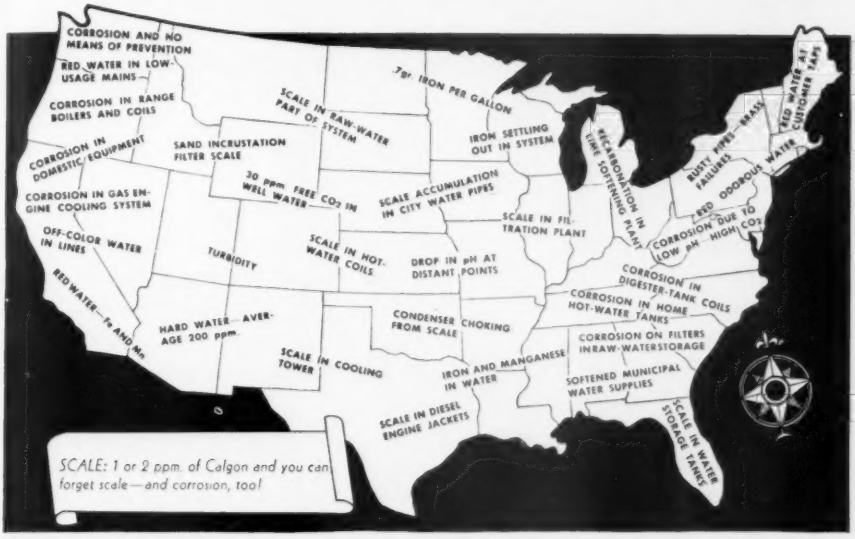
The **AMERICAN WATER SOFTENER COMPANY**
WATER REFINING EQUIPMENT HEADQUARTERS
INDUSTRIAL · PROCESS · RAILROAD · MUNICIPAL
HOUSEHOLD, ETC.
Lehigh Ave. & 4th St., Phila., Pa.

Filter Sand and Gravel
WELL WASHED AND CAREFULLY GRADED TO ANY SPECIFICATION.
PROMPT SHIPMENT IN BULK OR BAGS OF 100 LBS. EACH.
Inquiries Solicited.
Northern Gravel Co.
P. O. Box 307, Muscatine, Iowa



The Langelier Motorized Water Hardness Apparatus
For the rapid and convenient determination of Calcium and Magnesium separately or in combination.
Write for descriptive folder
Chemlab Specialties Co.
52 Alvarado Rd., Berkeley, Cal.

In what state of trouble are you?


CORROSION AND NO MEANS OF PREVENTION
RED WATER IN LOW-USAGE MAINS
CORROSION IN RANGE BOILERS AND COILS
CORROSION IN DOMESTIC EQUIPMENT
CORROSION IN GAS ENGINE COOLING SYSTEM
OFF-COLOR WATER IN LINES
RED WATER—Fe AND Mn
SAND INCRUSTATION FILTER SCALE
30 ppm FREE CO2 IN WELL WATER
TURBIDITY
HARD WATER—AVERAGE 200 ppm.
SCALE IN RAW-WATER PART OF SYSTEM
SCALE IN HOT-WATER COILS
SCALE IN COOLING TOWER
7gr. IRON PER GALLON
IRON SETTLING OUT IN SYSTEM
SCALE ACCUMULATION IN CITY WATER PIPES
DROP IN pH AT DISTANT POINTS
CONDENSER CHOKING FROM SCALE
IRON AND MANGANESE IN WATER
SCALE IN DIESEL ENGINE JACKETS
RECARBONATION IN LIME SOFTENING PLANT
SCALE IN FILTRATION PLANT
RUSTY PIPES—BRASS FAILURES
RED WATER AT CUSTOMER TAPS
RED ODOROUS WATER
CORROSION DUE TO LOW pH—HIGH CO2
CORROSION IN DIGESTER-TANK COILS
CORROSION IN HOME HOT-WATER TANKS
CORROSION ON FILTERS IN RAW-WATER STORAGE
SOFTENED MUNICIPAL WATER SUPPLIES
SCALE IN WATER STORAGE TANKS
SCALE: 1 or 2 ppm. of Calgon and you can forget scale—and corrosion, too!

Fight scale and corrosion now . . . with Calgon!

THAT municipal water plants throughout the country are experiencing scale or corrosion difficulties is apparent from the numerous problems that are constantly being brought to our attention.

Why do water works men come to us in scores with these problems? Because they have heard about Calgon, read about Calgon's effectiveness elsewhere, and feel that perhaps Calgon can help them.

And Calgon *is* helping them in rapidly increasing numbers — in more than 200 cities already. Moreover, it can help *you.*

Calgon enables you to *deliver* water, near or far, that has the same high quality as the water *leaving* your plant—stabilized water that prevents the costly nuisances of scale and "red water."

Calgon is a sound, accepted remedy—efficient, dependable and economical. No costly equipment is necessary. At its new low price, Calgon is a water works "must."

VISIT THE CALGON EXHIBIT

at the 61st A. W. W. A. Convention in Toronto. A visual demonstration of Calgon's ability to control corrosion will be featured.

WATER WORKS APPLICATIONS OF CALGON*

1. Controls corrosion.

2. Prevents precipitation of dissolved iron.

3. Stabilizes water following softening.

4. Prevents scale formation from hard, high-bicarbonate waters.

** Calgon is the registered trade-mark of Calgon, Inc for its glassy sodium-phosphate products.*

calgon, inc.
300 ROSS ST. PITTSBURGH, PA.

Calgon, Inc., Pittsburgh, Pa.
Please send free sample and data on:
Corrosion Control ☐ *Scale Prevention* ☐

My problem is.....

Name.....

Affiliation.....

Address.....

City.....*State*.....

Roland W. Keene, Pacific Coast Sales Manager of the Hersey Manufacturing Co., died recently at his home in Glendale, Calif. Mr. Keene was born in 1885 in Portland, Me. He joined the Hersey Manufacturing Co. at Chicago in 1912, established a branch for the Company in San Francisco in 1917, and opened the Company's Los Angeles office in 1921.

(*Continued from page 6*)

luncheon served in the Florence fire station. One hundred and nineteen were counted in attendance at the luncheon. There was brief discussion of the bill covering tenure of office for sewage and water works men. All present were urged to use their influence to obtain a favorable consideration of the bill by the current New Jersey legislature.

Prof. H. N. Lendall, Engineering Dept., Rutgers College, New Brunswick, described plans for presenting in several centers throughout the state courses designed to help water works men with defense problems. The nature of the courses and the centers of meeting will be established in the near future according to the interest and wishes indicated by the local water works men.

Charles H. Capen is now serving as Principal Sanitary Engineer for the Zone 2 Constructing Quartermaster at 120 Wall St., New York, N. Y. This is a civilian position. On May 15, Mr. Capen was granted a two-year leave of absence from the position of Engineer for the North Jersey District Water Supply Commission.

R. S. Bubb, Advertising Manager of the Lock Joint Pipe Company, Ampere, N. J., was recently elected President of Industrial Marketers of New Jersey, the sixth largest chapter of the National Industrial Advertisers Association. Since graduating from Yale (Sheffield) in 1932, Mr. Bubb spent several years with the General Electric Company prior to accepting his present position with the Lock Joint Pipe Company.

(*Continued on page 10*)

ZECO GREENSAND ZEOLITE

Engineering service, designs, equipment, and construction for water supply and water purification works of all kinds.

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. Corexite mineral for corrosion and water stabilization.

ZEOLITE CHEMICAL CO.
90 WEST STREET **NEW YORK, N. Y.**

Here it is . . .

The EMPIRE STREEEMLINE METER

It's as modern as tomorrow

a thoroughly modernized version of the well known National Empire Meter. It embodies the same basic principle of oscillating piston measurement that has been time proven in hundreds of thousands of Empire Meters.

Results from the extensive Pittsburgh-National program of research and development are obvious in the STREEEMLINE. The numerous improvements and refinements built into this meter provide even superior performance and add materially to the important aspects of accuracy, long life and accessibility.

See this outstanding development in meter design and construction in the Pittsburgh-National exhibit booths at the A.W.W.A. Convention in Toronto. A new bulletin giving complete information on the Empire STREEEMLINE will be mailed upon request.

FEATURES

- **TWO-PART, SNAP-JOINT MEASURING CHAMBER**—Scientifically designed and proportioned with dual inlet and outlet ports. Provides accuracy even superior to Empire Meters built in the past.
- **EMPIRE BALANCED PISTON**—Time proven oscillating piston design, with piston pilot, results in exceptional accuracy on low flow rates and assures sustained, quiet operation.
- **OIL ENCLOSED GEAR TRAIN**—Ingenious four-wheel design, utilizing top half of measuring chamber as bottom plate. All spindles operate in fully enclosed rubber bushings. Rugged gears, with special tooth, for quietness and sensitivity.
- **ALL WORKING PARTS ASSEMBLE AS COMPLETE UNIT, WITHOUT USE OF SCREWS**—Only meter made with oil enclosed gear train having but three interior castings. Designed for simplicity, compactness and utmost accessibility. Snap-joint construction with dowel pins assures absolute alignment between measuring chamber and intermediate train.
- **COMPLETE FROST PROTECTION**—The cast iron bottom plate, corrosion protected with a coat of RESISTIN, is designed to break in event of freezing. Since both measuring chamber and enclosed intermediate gear train housing utilize snap-joint construction, without screws, the parts will separate when the frost bottom plate breaks, thereby relieving the working parts from strain and distortion. This design provides the first fully frost-protected enclosed gear train.
- **CIRCULAR DIAL REGISTERS**—Either straight or circular reading type, having large, red, center test hand, recording in gallons, cubic feet or other units of measurement.

SEE US AT THE 61 AWWA TORONTO CANADA

NATIONAL METER DIVISION
PITTSBURGH EQUITABLE METER COMPANY
4207 FIRST AVENUE BROOKLYN, N.Y.

National METERS

(*Continued from page 8*)

Joseph Goodman, Commissioner of the New York City Department of Water Supply, Gas and Electricity, died at his home on May 9. He was 65 and had been a municipal employee since 1901.

Mr. Goodman was born in Hungary and came to this country at the age of ten. He attended New York public schools and received a Bachelor of Arts degree from the College of the City of New York. He then entered the Columbia University School of Mines from which he was graduated as a civil engineer in 1898. For the next two years he served as an instructor at Columbia University, and then was a computer for the City's old Public Works Department. He was engaged in private structural work for a short time before 1901 when he became an employee in the transit department of the Bureau of Water Supply.

After four years as a transit man, he became an assistant engineer. He had charge of construction on Long Island for the Brooklyn water supply in 1909 and later became Engineer in charge of the division of investigation, design and statistics. After a year's service as Acting Deputy Chief Engineer, Mr. Goodman was appointed Deputy Chief Engineer of the Bureau in 1934. Two years later Mayor F. H. LaGuardia named him Chief Engineer. After the death of Commissioner Thomas W. Hammond in the summer of 1936, Mr. Goodman became Acting Commissioner.

When Mayor LaGuardia appointed Mr. Goodman Commissioner on October 27, 1936, the Mayor said: "This is an unusual procedure this morning. It is something more than the mere swearing in of a Commissioner. It is entirely new in municipal government. It establishes career men permanently as heads of departments." Turning to Mr. Goodman, the Mayor said: "You have given your life to your work. You may not be known in political circles, but that is to your credit."

Thus was the political patronage system rebuked, the Mayor saying that "every specialized department of the City should have a career commissioner to permit continuity in administration."

Mr. Goodman was known as an indefatigable worker. One of his most recent major problems was the conservation of New York City's water supply when it was so seriously threatened by drought in 1939 and 1940.

He was a member of the A. W. W. A., the American Society of Civil Engineers and the Municipal Engineers of New York City.

(*Continued on page 12*)

Ever since the first water meter was built, many different types have come and gone but neither then nor now has the Hersey Disc Meter ever been surpassed for close registration, durability and low maintenance cost.

HERSEY MANUFACTURING CO.
SOUTH BOSTON, MASS.

BRANCH OFFICES:
NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA
DALLAS — CHICAGO — SAN FRANCISCO — LOS ANGELES

HERSEY

(*Continued from page 10*)

New Materials and Gadgets

1. Magnesium fires and incendiary bombs can now be quickly and safely extinguished by use of a new powder claimed to be an improvement over talc or sand for such use. It is said to be non-abrasive and hence may be used freely around machinery.

2. An important advance in the control of fluorescent light is reported with the use of three types of readily attached prismatic glass lenses. All of the same size, the lenses are used to direct the light rays from the fluorescent tubes to shed better light under these conditions: (1) high vertical surfaces, (2) low ceilings and general lighting, and (3) high ceilings and accent lighting.

3. Photographic prints may now be protected from grease, fingermarks, gas, or water by spraying, dipping or brushing them with a colorless lacquer which may be washed with a soap solution.

4. A new blue glass for welders helmets has been designed to prevent all ultra-violet and most infra-red rays from reaching and injuring the user while welding aluminum or bronze. The new glass is said to permit closer observation and control of the metal flowing onto the weld.

5. When you lose a nut or screw in a dark or unhandy spot, it may not only be found but may be picked up with an extension tip flashlight which has a magnet at its tip.

6. To prevent perspiration from trickling down into the eyes, there are available absorbent bands which are worn completely around the head. They are designed to be wrung out and washed in soapy water.

7. To test fire extinguishers, hose, engines and sprinkler systems, there is now on the market a pump to be attached to the water supply line. By working a handle the water pressure may be built up to test any equipment and also to give it a thorough flushing.

Readers can obtain further information by sending a postal to the A. W. W. A. headquarters giving the reference numbers of any of the above items and citing the June issue as the source.

(*Continued on page 14*)

3 *Money, Time and Labor Saving Features of*

UNIVERSAL CAST IRON PIPE

LAID WITH ONLY WRENCHES

NO CAULKING MATERIALS

NO GASKETS. NO BELL HOLES TO DIG.

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Have you received your copy of Dr. Frank E. Hale's revised and enlarged edition of "The Use of Copper Sulphate in Control of Micro Organisms." WRITE TODAY ON YOUR LETTERHEAD!

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(Continued from page 12)

Report of Indiana Section Meeting

The 34th annual meeting of the Indiana Section, held in affiliation with the Indiana State Board of Health, convened on April 24 and 25 in the Antlers Hotel, Indianapolis.

For the two-day session, 223 men were registered, this exceeding last year's registration by nine. Of the 142 members of the Section, 86 were represented, making a Henshaw Cup percentage figure of 60.5 per cent.

Officers elected at the closing luncheon were L. A. Geupel, Evansville, Chairman; E. F. Kinney, Indianapolis, Vice-Chairman; H. G. Horstman, Indianapolis, Secretary-Treasurer; and P. H. Reardon, Marion, Assistant Secretary. C. K. Calvert continues to represent Indiana on the Board of Directors of the A. W. W. A.

Paul C. Laux, Anderson, was nominated for the Fuller Award in recognition of his pioneer work and constructive leadership in district meetings, for the training of water works operators, and for his development of a flash test for the control of break-point chlorination.

Three national officers attended the meeting: Norman J. Howard, President; Louis R. Howson, Vice-President and President-Elect; and William W. Brush, Treasurer.

The program was headlined by talks dealing with the vital and pertinent problems faced by utilities during the current war and defense emergency.

In his luncheon address, Mr. Howard told of Canada's efforts in meeting the emergency. Although the government had been informed shortly after the ill-destined Munich conference that definite plans had been made to sabotage utilities when war came, there had been only one case reported

(Continued on page 16)

American Water Works Association
61st Annual Convention
Toronto, Canada—June 22-26, 1941
IF YOU HAVE NOT YET MADE RESERVATIONS
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The Toronto Convention & Tourist Association, Inc.
37 Bloor Street, West Toronto, Ontario
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TO MEET YOUR NEEDS
MAKE RESERVATIONS NOW

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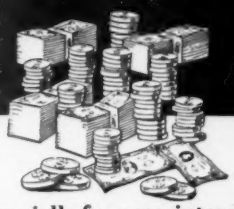
Tell us how you used Perchloron for emergency water purification



Here's a prize contest especially for superintendents and engineers of municipal water works. Twenty-five dollars ($25.00) will be paid by Penn Salt for each outstanding case history of emergency water purification with Perchloron. Five dollars ($5.00) will be paid for similar case histories not judged worthy of major prizes, but deserving recognition.

Send your entry . . . 500 words or less . . . today to Pennsylvania Salt Manufacturing Co., Widener Bldg., Philadelphia, Pa. The contest closes on October 1, 1941.

A TYPICAL PERCHLORON CASE HISTORY

This is an outline of the sort of story that may win you a prize: The quality of a section of a city's public water supply was being questioned because of the positive presumptive B. Coli tests in one suburban section, despite the fact that negative samples only were obtained on the balance of the distribution system. Pollution was thought to be entering the main somewhere between the city proper and this suburb.

Pending location and correction of the source of the pollution, emergency disinfection was attained by continuously injecting a solution of Perchloron into this main. This was done by a conventional hypochlorite pressure feeding pump, which delivered the Perchloron solution into the main through an emergency tap. The quantity added was sufficient to attain the desired disinfecting residual after 20 minutes' contact, and the 16 miles of feeder main provided the desired retention period.

Thanks to Perchloron, this section was assured of a safe water supply until the source of pollution could be discovered and the trouble corrected.

Perchloron, dustless and dry, a free-flowing and readily dissolved powder containing more than 70% available chlorine, is also useful for sanitizing new mains, for clear wells and filters, and for swimming pool sanitation. Packed 9 handy-sized cans to the case, each can with airtight cover; also in 100-lb. drums. Write for the new handsomely illustrated booklet on Perchloron.

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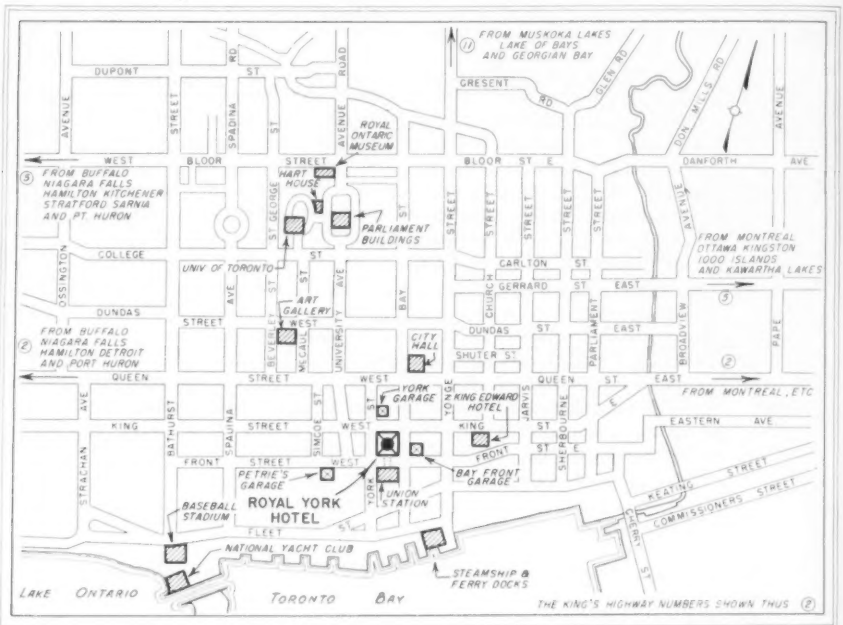
(*Continued from page 14*)

to date. Canadian utilities have adopted rigid protective measures, with emphasis starting on the personnel. Admission to the property was curtailed and placed under strict supervision. Barbed wire entanglements and armed patrols were utilized, as well as directional illumination, as a defense against prowlers. Decentralization of personnel, important records, and equipment was planned. A complete study was made of all equipment available for emergency use, as well as a mapping of water supplies in addition to the regular system in case of its forced failure. The priority of materials for use in water plants was discussed as one of the vital points in the defense program.

Mr. Brush illustrated his talk on "Our Job in Times of Stress" with pictures taken in Spain and England, showing dramatically the effects of

(*Continued on page 18*)



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(Continued from page 16)

bombs and shells upon the streets and utility lines. He explained the methods used in London in repairing the devastation caused by high explosives.

L. A. Geupel, Chairman of the Section's Emergency Sub-Committee, explained the workings of his group. (See Mr. Geupel's valuable report published in full in this issue of the JOURNAL.)

L. R. Howson likened "Good Water Works Management" to that of individuals. Sound planning for the future and the co-ordination of requirements with financial ability to support them were recommended, together with the development of a living routine which would take one through an orderly progression with an adequate means so that the future would largely take care of itself. Rates should be designed for future requirements. A sound construction program was stated as one of the best deterrents to the raiding of a water works treasury. The lack of centralized top responsibility in many municipal plants was deplored, with the observation that the most satisfactory management consisted of a special commission with overlapping terms of such lengths that no one political administration could upset the board by new appointments.

The necessity of obtaining reliable records of water level fluctuation

(Continued on page 20)

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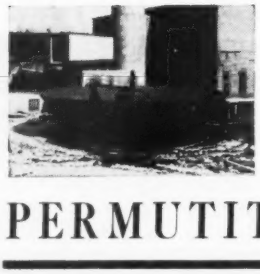

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First — this water meter was first produced in a form so basically correct, so fundamentally right for its purpose, that its basic design has never been essentially changed. That is to say, later improvements have not made older Trident Meters obsolete.

Second — every essential improvement in Disc Water Meters made in the last 40 years is found in the modern Trident Meter today . . .

— and can be incorporated in Tridents made as long as 40 years ago, by means of modern Trident interchangeable parts.

Think! Even in 1899, there were such "modern" Trident pioneering features as the Breakable Bottom, the Thrust Roller and the Snap-Joint Disc Chamber, which protect accuracy and reduce maintenance cost in Trident Water Meters today.

At first, as the initial million Tridents were produced, improvements (such as heat proof renewable bushings) were minor . . . but the basic design of the Trident Meter remained unchanged. New models did not supplant older ones.

Then, as the Trident millions swiftly mounted, Neptune pioneered in new ways to improve and protect meter accuracy and prolong life—still without the necessity of changing the basically correct design of the meter, without making old models obsolete.

The year 1919 saw the introduction of such further technical developments as the Trident Oil-Enclosed Gear Train. Screwless Registers were perfected in 1921-24; the 3-part Disc in the latter year; the Protective Sand Ring two years later; then in 1939 came the Thrust Roller Bearing Plate . . . all readily inserted into old Trident Meters.

Remember one thing — all this time the basic Trident Meter design has remained unchanged. In other words, Trident Meters of yesterday can logically be made "better than new", by the insertion of the interchangeable parts of TODAY. Interchangeability was, and is, the basic principle and policy of Trident Meter design.

Today the Trident Meter remains, as it always has been, the best water meter on the market, if the testimony of more than 6 million made and sold (the great majority still in service) is a true criterion of value.

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(*Continued from page 18*)

was emphasized by C. L. McGuinness, Assistant Geologist of the U. S. Geological Survey, and G. F. Fix, Assistant State Geologist of Indiana, in their discussion of "Ground Water for Public Supplies in Indiana." Five-sixths of the approximately 300 public water supplies in the state use ground water, supplying an estimated 800,000 persons, and approximately two-fifths of the two million people in the state are served by public water supplies. The remaining use surface water. About one and one-third million people with no public water supply available use ground water.

The total daily pumpage of ground water in the state at present is between two and three hundred million gallons. The geological survey studies of water levels in most of the wells in the state indicate that last fall marked the lowest stages on record, this being attributed to a general deficiency in precipitation in the last decade. Where affected by pumping, the low stages were nearly four feet lower than average. The suggested remedy was to increase the total yield by redistributing pumpage over a wider area or to develop supplies from new sources. In restricted areas of heavy pumping where ground water supplies were of vital importance, it might be found practicable to recharge artificially the water bearing beds. Prof. Fred L. Serviss of Purdue University discussed the many local phases of the problem and stressed the need for the co-ordination of all facilities available in making continuing studies of the problem.

Three group meetings were held, one for managers, superintendents, and distribution men; one for filter operators and others interested in the production of water; and another for those interested in accounting problems.

Prof. W. E. Howland of Purdue University, in his paper on "Manual on Paints," explained the need for the interpretation of the technical terms used by paint manufacturers into water works language. Specifications prepared by the Chicago Sanitary District and the Indianapolis Water Company were used as examples of such manuals, and the various indexes and formulae were explained in detail.

T. E. Milligan, Fort Wayne, made the report of the sub-committee on "Meter Settings," in which the advantages and disadvantages of outside and inside settings were thoroughly analyzed.

(*Continued on page 22*)

Felix Seligman, Manager of the Duluth, Minn., Water and Light Dept., died on May 29, losing a battle which his many friends knew he had been fighting for the past year. With full knowledge of the nature of his illness, he continued effectively to carry on with his duties as best he could. He was a Director of the A.W.W.A. and attended the Board of Directors Meeting in New York City in January. He had been a member of the A.W.W.A. for many years.

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WHEN PIPE CARRYING CAPACITY STAYS UP!

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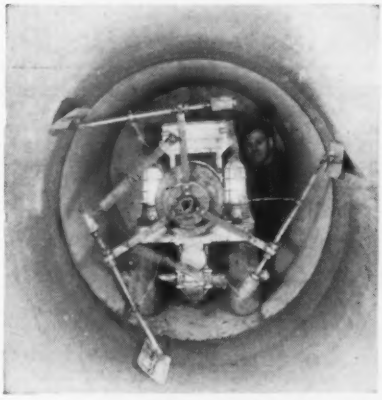

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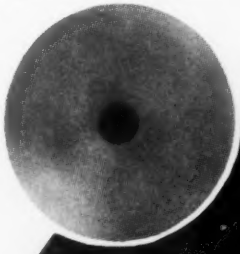

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(*Continued from page 20*)

Everitt Robbins, Scottsburg, explained the "100% Meterization Program" now being conducted in his plant.

Two round table discussions were held, John L. Ford, Wabash, conducting the forum on "Value of Foresight in Water Works Operation" and Clyde Williams, South Bend, the clinic on "Selling the Advantages of a Maintenance Manual."

Elmer C. Schwier, Indianapolis, led a discussion of accounting problems encountered in the operation of private and municipal utilities. Plans were laid for a more extensive program next year.

Jack Nickel, Indianapolis, explained the use and operation of "Breakpoint Chlorination" in small plants before the filter operators' meeting.

Marshall P. Crabill, Indianapolis, discussed the "Cleaning and Handling of Filter Sand and Gravel," covering three methods of washing, namely sand washing by ejector-separator method; the cleaning and regrading of underlying gravel; and the use of Palmer Surface Wash.

Richard H. Coote, Michigan City, in his "Studies in Coagulation," stressed correct mixing as one of the most important factors. The selection of coagulant, determined by extensive experiments, proved of value in taste and odor control.

(*Continued on page 26*)

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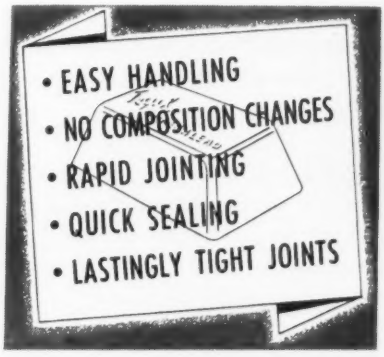

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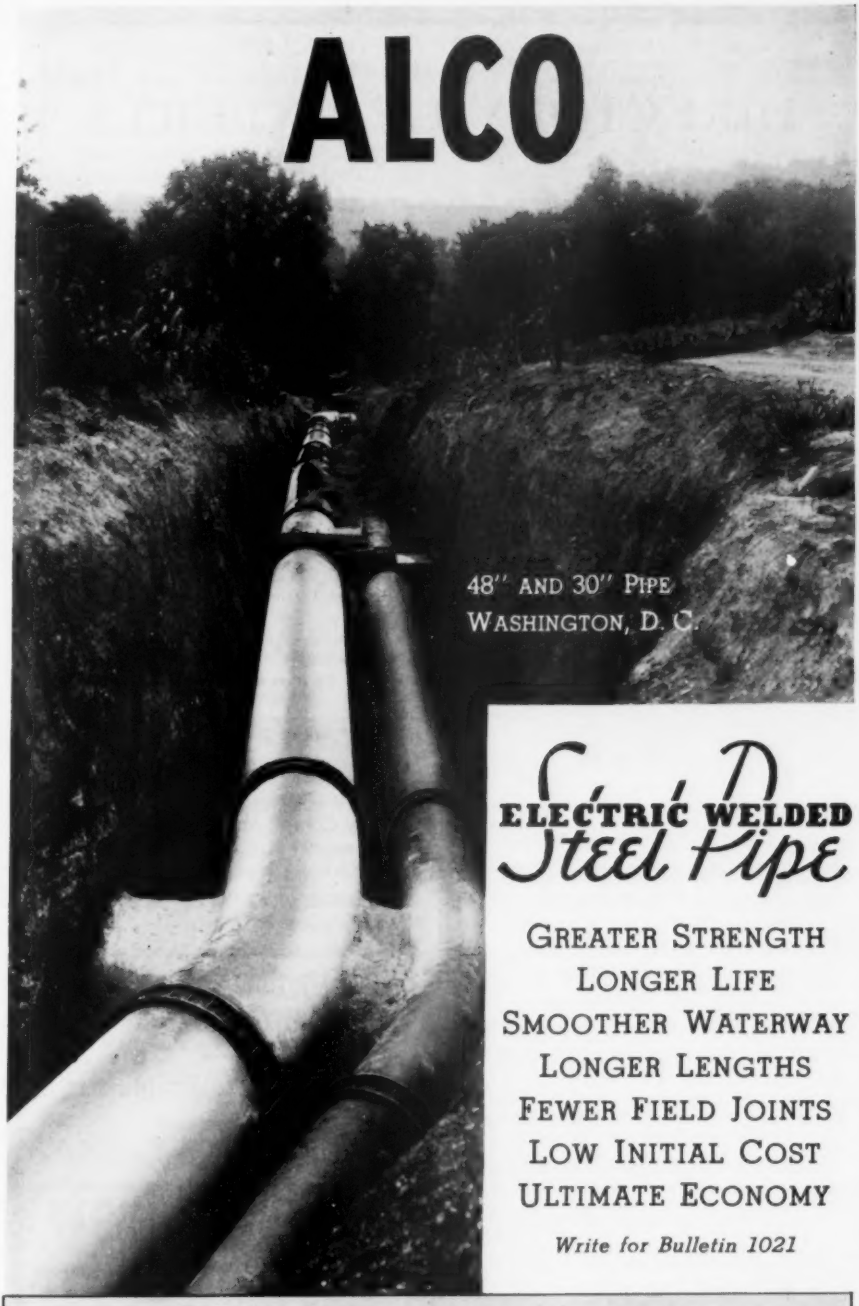

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(*Continued from page 22*)

J. D. Richetta, Indianapolis, spoke on "Sanitary Problems in Well Supplies," stressing the dangers from flood or high water, as well as the location, sealing, and protection of wells. The rules and regulations concerning the use of wells were also analyzed.

In his discussion of "Ozonation at Whiting, Indiana," James Bartuska described his plant and compared operating results with straight chlorination under similar conditions. His talk was illustrated with lantern slides.

The problem of "Furnishing Water Service Beyond Corporate Limits" was discussed by three speakers. W. C. Shoemaker, Richmond, read a paper prepared by F. R. Berry, New York, engineer of the American Water Works and Electric Company, stressing the reasonably uniform relation between operating expenses and operating revenue. (Mr. Berry's paper is presented in this issue of the JOURNAL.)

E. D. Anderson, Hammond, said that the economic factors must be weighed against the "good will" factors in the consideration of some extensions. (Mr. Anderson's paper is also published in this issue of the JOURNAL.)

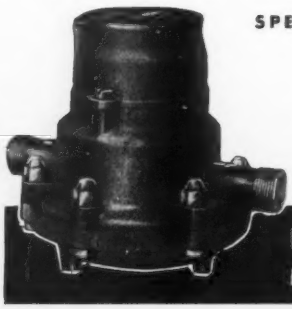
Nathan Levy, South Bend attorney, discussed "The Legal Liabilities of Such Extensions under Indiana Law." He explained the public service commission rules, suggested possible revisions of the rules, and discussed several cases in which he was personally involved.

LaVerne Trentlage, Elgin, Illinois, talked on the question "Is it Profitable and Practical to Have Accurate Meters Sensitive to Low Flows?" His record of tests showed that the knowledge of popular daily flows, plus truer accuracy and increased sensitivity, automatically means a bigger income. The most popular testing sin committed by meter shops today is testing on full (or 20 g.p.m.) flow—which is never used, as only 0.7 per cent of all water is now demanded on flows over 12 g.p.m.; and seldom or never testing for accuracy on $\frac{1}{4}$ g.p.m., although nearly 14 per cent of all water used is actually used daily on this or smaller sizes.

A motion picture, "The Waterway to Health," was shown by John E. Kleinhenz, Indianapolis Water Company.

(*Continued on page 28*)

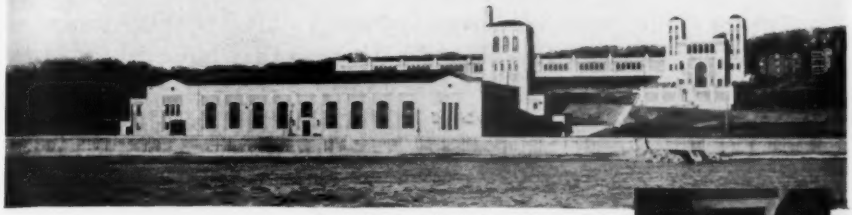
FIRST QUALITY METERS EXCLUSIVELY



SPECIFY *American* or *Niagara*
(BRONZE CASE) (IRON CASE)
Water Meters
WRITE FOR CATALOG

BUFFALO METER COMPANY
Established 1892 2914 Main St., Buffalo, N. Y.

Toronto's Victoria Park Plant Has Daily Capacity of 100,000,000 Gallons



The Modern Pumping Station at Victoria Park

A Chemical Feed Machine at the Victoria Park Filtration Plant

Canada's Largest and Most Modern Water Purification Plant Uses Aluminum Sulfate Furnished by The Nichols Chemical Company, Limited, Canadian Subsidiary of General Chemical Company

Glass Partitions Separate Operating Gallery from the Glassed-in Filter Beds

The beautiful new Victoria Park pumping station and water purification plant embodies the latest design and many new important features.

The Victoria Park Station is the largest plant in the Dominion, having a capacity of 100,000,000 gallons daily. Among the many novel features in the filter plant are the glass partitions separating the operating gallery from the glassed-in filter beds.

Aluminum sulfate is fed through gravimetric type dry feed machines which are capable of feeding quantities ranging from 2000 pounds down to 20 pounds per hour.

The City of Toronto can be justly proud of the Victoria Park Plant as an outstanding achievement in the field of water purification. General Chemical Company, through its Canadian subsidiary, The Nichols Chemical Company, Limited, is equally proud of its privilege to help meet this plant's coagulant requirements.

Be sure to attend the 61st annual meeting of the American Water Works Association at the Royal York Hotel, Toronto, Ontario, June 22-26, 1941.

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK, N. Y.

Sales Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City Milwaukee • Minneapolis • Newark (N. J.) • New York • Philadelphia • Pittsburgh Providence (R. I.) • St. Louis • Utica (N. Y.)

Pacific Coast Sales Offices: San Francisco • Los Angeles

Pacific Northwest Sales Offices: Wenatchee (Wash.) • Yakima (Wash.)

In Canada: The Nichols Chemical Company, Ltd. • Montreal • Toronto • Vancouver

(*Continued from page 26*)

Gov. H. F. Schricker of Indiana made the welcoming speech at the luncheon on the first day. Charles W. Jones, General Superintendent of Wm. H. Block Company, Indianapolis, spoke on "Customer-Employee Relationships" at the informal dinner on Friday night.

HERMAN G. HORSTMAN
Secretary-Treasurer.

Patrick Quilty, who has served in New York City's Department of Water Supply, Gas and Electricity for 35 years, has been appointed by Mayor F. H. LaGuardia to the position of Commissioner of the Department, to succeed the late Joseph Goodman. Mr. Quilty has been serving as Chief Engineer of the Department.

At the same time there were announced six other promotions involving civil service men: William H. Correale, Deputy Commissioner in charge of the Borough of Queens, was made First Deputy Commissioner of the Department. William Flannery, Deputy Chief Engineer, succeeded Mr. Quilty as Chief Engineer. Richard Ankener, who had been serving as Assistant Engineer supervising construction and distribution in Queens,

(*Continued on page 30*)

For Underground Service Lines

ANACONDA COPPER and RED-BRASS

Anaconda Copper Tubes in straight lengths and coils... Anaconda "85" Red-Brass in straight lengths only – both are products of dependable quality. Made by the world's largest and most experienced manufacturer of copper and brass, and stocked by leading supply houses.

3924

THE AMERICAN BRASS CO.
General Offices: Waterbury, Connecticut

THEY "SHOW UP" IN SLUDGE LINES

Crane No. 778 Light Standard Double Disc Gate Valves

At a glance, these iron body outside screw and yoke valves show exact position of the disc. Ideal for manifold service in sludge tank lines. Rated at 100-pounds water, they save the extra cost of heavier valves. Crane non-jamming disc design assures smooth operation and tight seating.

• • •

For the right valves for specific working conditions, look to the Crane line of over 38,000 piping items for every service. There's a Crane branch or Wholesaler nearby—ready to serve you.

CRANE

VALVES • FITTINGS • PIPE • PLUMBING • HEATING • PUMPS

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO

(*Continued from page 28*)

succeeded Mr. Correale. Tobias Hochlerner, an Assistant Engineer, became Deputy Chief Engineer, and Harry Holland, his assistant, was promoted to his superior's former post. Mr. Holland's previous position was filled by Charles D. Livant who had been serving as an Assistant Engineer in a different capacity.

$1,000,000 of Chicago water works revenue certificates were sold recently to Halsey, Stuart & Co., Inc., and Mullaney, Ross & Co., Chicago, on a bid of 100.31 for 2s. Dated May 1, 1941, the certificates are to mature on May 1, 1959 and 1960. A public offering of the bonds is not planned at this time.

Edward E. Wall has resigned from the position of Director of Public Utilities at St. Louis, Mo. Mayor William Dee Becker has announced the appointment of Max H. Doyne, Consulting Engineer with the firm of C. E. Smith & Co., to succeed Mr. Wall.

Mr. Wall, who is 80 years old, has served the city of St. Louis for nearly 50 years. He was first employed in the City Water Dept. in 1888 but left the following year to engage in private practice. In 1892 he was appointed

(*Continued on page 32*)

pH AND OTHER POPULAR WATER TESTS
WITH
HELLIGE
GLASS STANDARDS
AND
COMPARATORS

You do not need to make your own standards, or wonder whether prepared standards have faded, if you use HELLIGE Glass Color Standards, which are *perpetually guaranteed against fading.* For their long life and reliability they have been the choice of hundreds of water plants.

HELLIGE Comparators, in combination with these standards, are enjoying an increasing popularity because of their durability, compactness and efficiency.

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3718 NORTHERN BLVD., LONG ISLAND CITY, N.Y.

WATER-BORNE
OUTBREAKS
in the
UNITED STATES
and
CANADA

1920-1936

by
Arthur E. Gorman
and
Abel Wolman

An unparalleled summary of studies concerning the relation of water supplies to typhoid fever, gastro-enteritis, etc.

A brochure that should be in the library of every sanitary engineer.

Price $1.00—postpaid if cash or check accompanies the order.

Sold only by
AMERICAN
WATER WORKS
ASSOCIATION
22 East 40th St.
New York, N. Y.

We use **A FEW BILLION GALLONS OF WATER OURSELVES**

60th ANNIVERSARY 1881 • 1941

As you will note by the little "Anchor" seal, this is Solvay's 60th Anniversary. That means that in 60 years we have had to find out a whole lot about water and its characteristics . . . for the very plain reason that our own manufacturing processes require the use of millions of gallons yearly.

Our business also takes us into many manufacturing fields where the relation between water and alkalies is extremely important to manufacturers' processes. We make, for instance, cleansers of various types for a variety of industries, which, in itself, requires a broad knowledge and experience of water conditions in every section of the country.

As manufacturers of Liquid Chlorine and Alkalies, used in both municipal and industrial water treatment, we have for years been in direct contact with water treating problems.

Much of this accumulated experience in the field of water treating can be yours merely for the asking. And with such a background, we do not feel it too much to say that water treating problems, whatever their nature, are "right down the alley" of Solvay Technical Service. Your inquiries are cordially solicited.

SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 RECTOR STREET NEW YORK, N. Y.

SOLVAY
TRADE MARK REG. U. S. PAT. OFF.
TECHNICAL SERVICE

(*Continued from page 30*)

Assistant Engineer in the Water Dept. and in that capacity he received much credit for the purification of the city's water supply about 1904. He was made Water Commissioner in 1911 and was appointed Director of Public Utilities in 1925. He held that position until his resignation, with the exception of one lapse due to local politics.

Mr. Wall has been a member of the A. W. W. A. since 1904. He was a Trustee in 1924–26 and was made an Honorary Member in 1936. Mr. Wall's loyalty to good administration and to faithful assistants was revealed clearly in the following article, quoted in full, from the *St. Louis Post-Dispatch* for May 7, 1941:

"The resignation of Edward E. Wall as Director of Public Utilities was submitted to Mayor William Dee Becker Monday under an agreement that nearly 100 employes in Wall's office who have been with the city for 15 years or longer will be retained in the new administration, it was learned today.

"Wall, who is 80 years old, declined to resign unless this condition was accepted, and the Mayor readily agreed to it. Wall told the Mayor that he was greatly concerned with the welfare of the large number of faithful and competent employes in his department, and that he saw no reason why

(*Continued on page 34*)

STOP RUST
with
RUSTOP

Cathodic Protection ends rust
•
Cleans old tanks
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Keeps new tanks clean
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No paint—No taste
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Write for estimate

ELECTRO RUST-PROOFING Company
29 W. Apple Street
Dayton, Ohio

M H

HIGH QUALITY VALVES HYDRANTS

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34. Address M & H Valve and Fittings Company, Anniston, Alabama.

"Skyscraper" WATERWORKS

TOWN OF LAKE, WISCONSIN

Plan to attend 61st meeting of A. W. W. A.—Toronto, Ont., June 22nd—26th.

Used HTH to sterilize million gallon system

● One of the most unusual municipal buildings in the country is located in Town of Lake, Wisconsin. What appears to be a "skyscraper" building is actually a concrete enclosed steel water tank . . . at the base of which is located the water department, softening plant, pumproom, and other offices pertaining to municipal management.

Designed by William D. Darby, consulting engineer, this modern waterworks is supplied by well water which is stored in the enclosed tank. The distribution system consists of 43 miles of mains of various sizes, and holds about 250,000 gallons when in static condition.

The entire waterworks, including a 40,000-gallon settling tank, was sterilized with Sanitation HTH before actual operations were begun. Using 50 p. p. m. of available chlorine 1,050 lbs. of HTH were required for this thorough sterilizing operation. Reports Engineer Darby, "We obtained very satisfactory results."

HTH comes in 5-lb. cans with replaceable caps, packed 9 cans to the case; also in 100-lb. drums.

Sanitation HTH is a dry, free flowing carrier containing more than 70% available chlorine. Many waterworks engineers keep it on hand for sterilizing new or repaired mains and for any and all emergencies requiring a mobile high test chlorine carrier. Send for 80-page booklet: "Hypo-Chlorination of Water."

THE Mathieson Alkali Works (INC)
60 EAST 42ND STREET, NEW YORK, N. Y.

LIQUID CHLORINE . . . HTH . . . SODA ASH . . . CAUSTIC SODA . . . BLEACHING POWDER . . . AMMONIA, ANHYDROUS and AQUA . . . BICARBONATE OF SODA . . . PH-PLUS (FUSED ALKALI) . . . DRY ICE . . . CARBONIC GAS . . . SYNTHETIC SALT CAKE . . . SODIUM CHLORITE PRODUCTS

(*Continued from page 32*)

employes of long standing should be fired due to a change in administration.

"When Mayor Becker assented to Wall's request, Wall returned to his office and wrote a partial list of employes to be retained under the agreement, which he later gave to his successor, Max H. Doyne, consulting engineer.

"Had Wall declined to resign, he could have been replaced by Mayor Becker without further discussion, as Wall's term automatically expired with that of former Mayor Bernard F. Dickmann. However, because of Wall's age and long record of competent service with the city, city officials thought it expedient to have him resign."

Interstate principles and rules to govern the operation of water supply projects involving a diversion of waters from the Delaware River Basin have been prepared under the authority of the Interstate Commission on the Delaware River Basin.

Marking the first successful interstate effort, in more than twenty years of recurrent wrangling over water rights and responsibilities in this drainage area, these principles and rules were drafted by the Commission's Advisory Committee on Quantity of Water in the Delaware River Basin.

(*Continued on page 36*)

PERMANENT CARRYING CAPACITY
MONO-CAST
ENAMELINE
CAST IRON PIPE & FITTINGS
PIPE MANUFACTURED BY THE MONO-CAST CENTRIFUGAL METHOD IN SAND-LINED REFRACTORY MOLDS
LOWEST PUMPING COST PERMANENT HIGH C VALUES

"Enameline" is the trade name for a 3-coat lining applied to the interior surface of Mono-Cast Pipe and Fittings. The first two coats consists of a special cement mortar, and the third coat is an asphalt paint. It is furnished at no extra cost, and is recommended for water main service throughout the United States except in very special cases where additional thickness of lining seems desirable. For such special cases, Acipco furnishes Mono-Cast Pipe and Fittings lined with cement as specified in ASA A21.4. Many millions of feet of Mono-Cast Enameline and Mono-Cast Cement-Lined Pipe are now serving satisfactorily. Write for detailed literature.

AMERICAN CAST IRON PIPE CO.
BIRMINGHAM, ALA.

New York City Chicago Los Angeles San Francisco
Pittsburgh Kansas City Minneapolis Dallas Cleveland

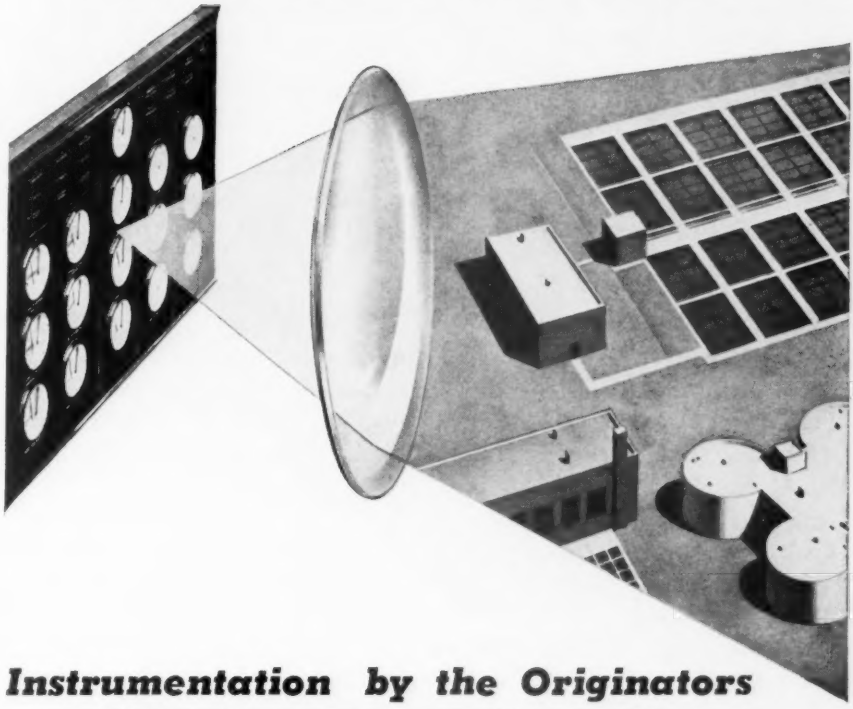
FILTER SAND

99 Per Cent Pure Silica
Washed, dried and manufactured to your specifications
Write for Prices on Bulk, Carload or Bags

Dawes Silica Mining Co.
Thomasville, Georgia

Peerless Pumps
—AS THEIR NAME IMPLIES
Acknowledged leaders in their field
HI-LIFT, TURBINE & HYDRO-FOIL
TYPES—capacities up to 100,000 g.p.m.
Ask for Literature.
PEERLESS PUMP DIV. - Food Machinery Corp.
Factories: Los Angeles, San Jose, Fresno, Calif., Canton, Ohio

The FOCAL POINT for Efficient Public Works Layouts...



Instrumentation by the Originators of Modern Process Control!

From intake settling tanks to final outlet valves, today's progressive designs for water works and sewage plants are developed around modern instrumentation. In this single feature of layout, efficient performance of the entire plant may be effectively focused.

There's a growing trend among designers to seek the counsel of Foxboro, at the outset. Foxboro engineers pioneered modern process control in industry as well as public works . . . originated many of its essential instruments, such as flow controllers, recording controllers and throttling controllers with automatic reset. Their experience may furnish constructive suggestions for your projects.

Write for Bulletin 232 on Foxboro sewage plant instrumentation and Bulletin 233 on water works. **The Foxboro Company, 150 Neponset Avenue, Foxboro, Massachusetts, U. S. A.** Branches in principal cities of United States and Canada.

FOXBORO
REG. U. S. PAT. OFF.
Instrumentation
FOR WATER WORKS AND SEWERAGE SYSTEMS

(*Continued from page 34*)

Members of the Committee are: Howard T. Critchlow, Engineer-in-Charge of the New Jersey State Water Policy Commission; Charles E. Ryder, Chief Engineer of the Pennsylvania Water and Power Resources Board; and Russell Suter, Executive Engineer of the New York Water Power and Control Commission. The report was issued from the offices of the Interstate Commission on the Delaware River Basin, Broad St. Station Building, Philadelphia.

Neil Kershaw, Chief Chemist of the Indianapolis Water Co. and a water works man well known throughout the field, has been made Chairman of the Indiana Section of the American Chemical Society. As Treasurer of the Indiana Section, Mr. Kershaw served for years as a diligent watchdog over the funds of that active group.

The New Haven Water Company has recently issued a 32-page covered booklet, "Water—Lifestream of a Community," which describes with excellent photographs, maps and text the supply, treatment and distribution of its commodity. It is a fine example of the use of well printed illustrations with effective use of some color. One section is devoted to "Guarding the Public Health."

Extension of a Water Works Line: Miss May L. Diven is now secretary to Arthur T. Clark, Secretary-Manager of the Water and Sewage Works Manufacturers Association. Miss Diven is the daughter of John M. Diven, of the Leadite Company, and the granddaughter of John M. Diven, President of the A. W. W. A. in 1892 and holder of many other offices in the Association, including that of Secretary from 1903 to 1923.

Water-cooled roofs, which help insulate factories, office buildings and homes against the sun's rays by means of evaporation, are the subject of the folder, "Spray Pond or Water-Cooled Roofs," (Form TA-2), published recently by Koppers Company, Tar and Chemical Division, Pittsburgh.

Wheelco Instruments Co., 1929-33 S. Halsted St., Chicago, has recently issued a condensed catalog, No. Z4000, covering in detail certain temperature control instruments and equipment and portable potentiometers.

(*Continued on page 38*)

Trade Mark MABBS Reg. U. S. Pat. Off.

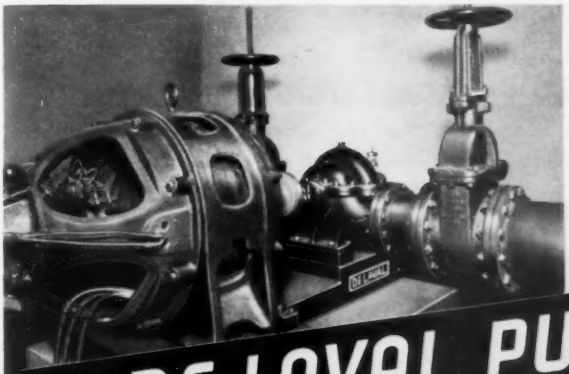
PREVENT WEAR AND CUTTING of rods, plungers and shafts by using

MABBS RAWHIDE PACKING

on your Water Works and Sewage pumps and valves. Practically antifrictional, it saves enough in POWER to pay for itself in a short time. For over 45 years Mabbs Rawhide Packing has proven its superiority over other packings for these purposes.

Why not use it in your plant and benefit thereby?

MABBS HYDRAULIC PACKING COMPANY, *Inc. 1892,* **431 S. Dearborn St., Chicago, Ill.**



De Laval raw water pump at Lake Underhill; provided with two impellers, one of 3 m.g.d. capacity for Winter use, and one of 6 m.g.d. capacity for Summer; driven by synchronous motor with remote control.

DE LAVAL PUMPS

Save Orlando 13% on Pumping Costs

Three De Laval high-lift pumps in Main Pumping Station; 3 m.g.d. each against 163 ft. at 1740 r.p.m.

In 1936 the City of Orlando, Fla., renovated its high-lift pumping equipment by installing three De Laval pumps in place of three older pumps of another make. For purposes of comparison a test of one week's duration was run with the older pumps and then with the new pumps.

The old pumps were found to take an average of 0.917 kw.hr. per 1000 gal. pumped, while the De Laval pumps used only 0.797 kw.hr., a saving of 13.1 per cent.

With an average daily pumpage of 2,500,000 gal. the annual saving at $2\frac{1}{2}$ ct. per kw.hr. is $2737.50.

If your pumping equipment is not of the latest and best, replacement with De Laval pumps will probably result in a similar saving. State your pumping conditions so that the De Laval Engineering Department can supply performance guarantee figures. *Ask for Publication P-4104.*

DE LAVAL STEAM TURBINE CO., TRENTON, N. J.

Visit our Booths Nos. 18 and 19 - Royal York Hotel,
Toronto, Ont. during the 61 Annual Water Works Convention

(*Continued from page 36*)

Report of the Ohio Section Meeting

The preparedness program had a marked effect on the registration of our meeting which opened on May 15 at the Gibson Hotel in Cincinnati. Our Chairman, Philip Burgess, was unable to be present because of work on a defense project which demanded his services only a few days before the meeting. Some of the other consulting engineer members were busy on defense projects and could not be present. C. P. Hoover was in Los Angeles, California, putting the new Los Angeles Softening Plant in operation. The registration amounted to 118, exclusive of ladies, and 130 attended the banquet.

Following the dinner and before the entertainment, the George W. Fuller Award was awarded to M. F. Hoffman, Superintendent, Commercial Department of the Cincinnati Water Works, on the basis of his outstanding activity in the Ohio Section affairs.

The meeting opened at 10:30 A.M., May 15, with an address by C. O. Sherrill, City Manager. He stressed the importance of water supply in the National Defense. The Cincinnati Water Works pumps were stopped by the January, 1937, flood. This was the first shutdown since the plant was built in 1907. Flood protection measures around water works structures have since been completed, the city manager reported. There has been a great increase in demand by satellite communities. He questioned the advisability of expansion of a plant for serving other municipalities and said the Cincinnati plant was large enough to take care of the city's needs for 15 or 20 years if franchises with surrounding municipalities were not renewed when they expire in 5 years. He suggested that possibly the franchises would not be renewed at that time.

Carl Eberling, Superintendent, Cincinnati Water Works and his department heads described the Cincinnati works and the workings of the various departments.

Mr. Eberling gave a brief account of the water works in general. A brochure description of the works was passed out following his talk.

Mr. Bahlman, Water Purification Supervisor, described briefly the water purification plant and some of the problems arising in treating Ohio River water. A change in coagulant is to be made. Ferric sulfate can be handled at this plant much easier than ferrous sulfate. The mixing and settling in the new plant produce, a much better water than formerly.

(*Continued on page 40*)

COOK Well Strainers

A reciprocal relation, the life and functioning of the one depending much on the other.

A. D. COOK, INC.
Lawrenceburg - Indiana

COOK Deep-Well Turbine Pumps

That EXTRA Something

YOU'LL NOTICE IT THE DAY
YOU START USING THESE
ACCLAIMED
ACTIVATED PRODUCTS

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STANDARD ACTIVATED ALUM

ACTIVATED BLACKALUM

CHAMPION
ACTIVATED CARBON

CHLORINATED
BLEACHING CLAY

PALMER FILTER BED AGITATORS

LABORATORY STIRRERS

Their dependability of performance is traditional . . . is it any wonder that these fine products are

BEING ENTHUSIASTICALLY RECEIVED by the waterworks profession . . . EVERYWHERE?

Everybody Likes Activated Alum

May we remind you again that we are exclusive agents for the Tate Pipe Lining Process . . . the rejuvenation treatment which will restore, preserve and even increase the carrying capacities of your pipe lines for years to come.

Activated Alum Corp.

Office
5701 Pennington Ave.
Baltimore, Md.

Works
Curtis Bay
Baltimore, Md.

(*Continued from page 38*)

A marked increase in coli-aerogenes organisms has been noted in the river water in the last six years, he said.

Mr. Duhme, Pumping Superintendent, described the traveling screens at the low service station. These screens have 150 m.g.d. capacity and if they become clogged, they are automatically rotated and cleaned. The low service steam plant has a pumping capacity of 90 m.g.d. It is being supplemented by four 15 m.g.d. electric motor driven units.

Mr. Sahnd, Distribution Superintendent, described the problems in connection with 1,300 miles of distribution lines—900 miles of which are within the city.

Mr. J. H. Rimmer, Assistant Distribution Superintendent, described the inspections which are made of all water works materials. All meters are inspected and tested before they are installed, he said.

Mr. Hoffman, Superintendent of the Commercial Department, described the keeping of the office records, collection of accounts etc. He said that during the past few years 18,000 new services have been installed with no more help in the office. The only increase in help necessary being that of two more meter readers.

(*Continued on page 42*)

STRONG - TIGHT AND FLEXIBLE!

Regardless of where you lay cast iron water mains —under paved streets, railroads or over bridges— you can depend on HYDRO-TITE to make joints that are not only strong, tight and flexible but "lasting". HYDRO-TITE is easy to prepare and use. It has a record of over 25 years without a single failure anywhere.

HYDRAULIC DEVELOPMENT CORPORATION

Main Sales Office: 50 Church Street, New York, N. Y.
General Offices and Works: West Medford Station, Boston, Mass.

A Symbol of Quality

HYDRO-TITE

Reg. U. S. Pat. Off.

A DEPENDABLE SELF - CAULKING JOINT COMPOUND

A simple dirt dam was quickly built where the pipe line crossed a creek . . . not a tight dam, or a dry one, but fully adequate for the fast, easy job of laying and coupling the lengths of "Century" Pipe.

BERNARDSTON, MASS., SAVES THE COST OF A COFFER DAM BY MEANS OF *"Century"* PIPE

THE Bernardston Water Board recently saved a substantial sum of money when extending the town's distribution system. 15,500 feet of Keasbey & Mattison "Century" Asbestos-Cement Pipe were installed, at a far lower cost for pipe and laying than with any materials previously used by the town for similar installations.

In addition "Century" Pipe delivered an extra bonus when the line had to cross a creek. Instead of a costly coffer dam, a simple dirt dam did the trick, because "Century" Pipe is easily laid with "Century" Flexible Couplings.

"Century" Pipe and Couplings provide a line with permanently tight joints . . . one which cannot corrode or tuberculate, and with a lastingly smooth interior that always keeps pumping cost low. Write Dept. 1017 for free catalogue, "Mains without Maintenance."

Approximately 1000 feet of "Century" Pipe were hauled at a time by a single truck and trailer . . . showing the light weight of this pipe. The resulting ease of handling cuts laying time and cost.

The Bernardston Water Board says that the combination of durability and economy led them to select "Century" Pipe. They were pleased by its low laying cost, and anticipate little or no maintenance.

Plan to attend the 61st Annual Meeting of the A.W.W.A., Toronto, Ontario, Canada, June 22nd to 26th.

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

(*Continued on page 40*)

The closing paper by this group was by Mr. Alexander, of the city law department. He touched on some of the legal problems in connection with the responsibility of property owners for water bills and the problems arising in collection of accounts.

In the afternoon session, Owen E. Clark described the new Toledo pumping station and purification works designed to provide the city with water from Lake Erie. The cost will be $10,000,000. The existing supply from Maumee River will be abandoned when this plant is put in service probably by August 1. Only 27 months of actual building time will have been required for complete construction. The size of the project can be judged by the sizes and length of pipe lines. Capacities of pumps etc.: (1) a gravity intake conduit 108 in. in diameter and 3 miles long; (2) Lake Erie pipe line, 78 in. in diameter, 9 miles long; (3) 80 m.g.d. filter plant; (4) 35 m.g.d. clear water reservoir; (5) high and low service pump stations and (6) 7 miles of high service mains, 72, 60 and 42 in. in diameter.

"Municipal and Suburban Water and Sewer Problems" was the title of a paper by J. A. Hickey, Director of Utilities, Cleveland.

Mr. Hickey described the Cleveland Metropolitan district and the many problems arising in connection with supplying 50 suburban communities

(*Continued from page 44*)

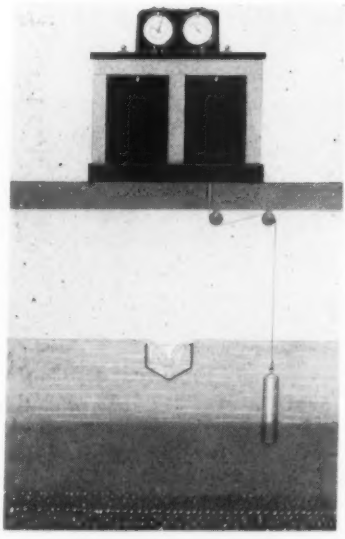
BUILDERS *New*

SAND EXPANSION GAUGE

Reads % Sand Expansion in Filter Bed
High-Torque principle assures accuracy
Displacer combines power and stability
Adjustable for individual filters

Builders Sand Expansion Gauge enables the operator to control both the *extent* and the *rate* of sand expansion in the filter bed. It operates independently of changes in wash water flow, pressure or temperature. Indicators and Recorders can be furnished in standard attractive designs for table or floor stand mounting. Large Indicators, 24" and 30" diameter, with white gas-tube illumination, are available for wall or ceiling mounting, using Chronoflo transmission between filter and Gauge.

See this new Gauge in operation at Toronto—or write for Bulletin 335.



Sand Expansion Gauge

Builders-Providence, Inc.
(Division of Builders Iron Foundry)
Providence, Rhode Island

Hold down costs!

Even *standard* socket fittings may have special features that influence your costs. For example, Grinnell Socket Fittings meet all standards of American Water Works Association as regards diameters and wall thicknesses. Yet, their accurately-determined *medium radii* not only cut flow friction, but save weight and bulk. You pay for no excess metal . . . no added labor of handling heavier units . . . no needless friction loss in operation.

Prompt delivery on these better fittings is assured by convenient warehouses and branch offices in principle cities. Grinnell Co., Inc., Executive Offices, Providence, Rhode Island.

SOCKET FITTINGS BY

GRINNELL

WHENEVER PIPING IS INVOLVED

(*Continued from page 42*)

with water and sewage facilities. The Cleveland water works has about 3,000 miles of mains, about 25 per cent of which are in suburbs, and they cover an area considerably larger than the area of the city, on higher elevations. On account of elevations reached in the suburbs, four service levels are required. Supplying water to suburbs where rates of growth are estimated and perhaps fall far short of the estimate, creates a problem regarding the apportionment of the costs involved. Problems have arisen due to supplying one municipality from mains which pass through other municipalities.

On account of the many situations which have developed, it is almost impossible to draw up a standard form of contract which is satisfactory to each community. The costs of service to suburban areas were discussed by Messrs. Howson, Hibbs and LaDue. They vary from 50 per cent above the city rate in Cincinnati to 10 per cent in Dayton and 5 per cent in Akron. In Cincinnati this charge includes fire protection, Mr. Hibbs stated.

Speaking on "Water Supply and The National Defense" F. H. Waring, Chief Engineer, State Department of Health, talked from notes. Special precautions should be taken in cities where defense operations are located. Precautions should be taken to ensure loyalty of water works employees. Visitors should be discouraged—when admitted they should be accompanied by a department official or have proper identification. Enclosures, guards and lighting should protect vulnerable points of a works. Duplication of facilities where feasible, is advisable to prevent possible interruption of service.

Auxilliary power equipment is advisable and stocking of values and fittings etc., to prevent loss of time due to possible delayed manufacture and transportation.

Mr. Waring recommended:

1. The inter-connection of water supply lines with adjacent municipalities for emergency service, especially where defense industries are located.
2. Do not give undue advertisement to placing of guards, systems of protection etc.
3. If choices of procedure are offered, call F.B.I. to suggest regarding protection measures to be taken.
4. Remember neighboring cities can render valuable service in case of disaster.

In discussion Mr. LaDue advised that operators make a note of vital points, but keep quiet about them. H. E. Jordan said everything which occurs which is out of line is not necessarily sabotage. An instance cited was an Army camp with water polluted as result of careless laying of pipe and not by sabotage as at first supposed.

(*Continued on page 46*)

CAST IRON PIPE

Manufactured in Sizes 2" to 96"—
A large stock constantly on hand,
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Flanged Pipe

Special Castings

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Bell and Spigot Pipe

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Works
PHILLIPSBURG, N. J.
EVERETT, MASS.

(*Continued from page 44*)

"Reforestation of Ohio Water Works Properties" by T. R. Lathrop, Assistant Engineer, State Department of Health:

The paper pointed out the advantages of planting of pine and spruce trees adjacent to water supply reservoirs. The cost of planting and the care necessary to make the planting successful was discussed. The first forest planting was at the Akron Plant in 1924. There were several others since then. Akron has a forest of 2,900 acres with 2,400 acres to be planted. The total water works forest area in the state amounts to 6,400 acres with more than 3,000 acres still to be planted. One of the advantages of these projects is that they form examples in various sections of the state which tend to show people the feasibility of growing timber.

In "Odd Collection Experiences," Lee Harvey, Superintendent, Water Works, Conneaut, described his methods of collecting bills and handling delinquent accounts. He closed with a number of humorous stories about happenings in Conneaut in connection with the collection of accounts. Others who were to discuss this subject were not present.

C. E. Inman, Superintendent, Water Works, Warren, gave a short paper on "Service Materials," covering unusual soil conditions which caused

(*Continued on page 48*)

CUMULATIVE INDEX TO
THE JOURNAL AND PROCEEDINGS

1881–1939 Inclusive

The Cumulative Index to the Journal and Proceedings of the American Water Works Association is ready for its place on your shelves, where it will render your bound volumes of these publications far more useful for ready reference. After this edition was printed the type was torn down, and future indexes will commence with the issue of January, 1940. Get your copy *now*. Price to members, $1.75; to members for cash with order, $1.50; to non-members, $2.00. Write to—

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Make your plans to attend the 61st Annual Meeting of the American Water Works Association, Toronto, Ontario, Canada the week of June 22 to 26, 1941.

RENSSELAER VALVE CO.

TROY, N. Y.

(*Continued from page 46*)

excessive corrosion. Lead services are used where practical, but copper services are more and more coming into use.

A paper on Fire Hydrant Location was scheduled to be given by the Chief of the Fire Department of Cincinnati. In his absence the Superintendent of the Fire Prevention Bureau, Louis Schraffenberger, gave the talk. His talk was concerned with the location of hydrants from the fire department's point of view. In discussing his paper, Mr. LaDue of Akron brought out the problem which so often confronts the water works man—the location of hydrants with respect to property lines, proximity to driveways, etc.

Mr. Hibbs asked Mr. Schraffenberger what the ultimate demand for fire protection was liable to be since the fire demand has increased considerably in the past. He replied that the capacity of the pumpers is from 750, to 2,100 g.p.m. and probably will not be over this figure for some time to come. Mr. Inman stated that in Warren fire hydrants are placed in front of the center of the lot where possible. Where lots are vacant, hydrants are always placed midway between lot lines. Mr. Harvey said that in Conneaut they are placed to the right or left of the property line at intersections and not near a private driveway.

Under "Lining Water Mains," W. R. LaDue, Superintendent, Akron Water Works, described briefly the lining of two lines which carry water from the filtration plant to the city. These are steel lines 36 and 48 in. in diameter and several miles long. Electrolytic action caused considerable corrosion and many leaks. These lines have been lined with cement and the work seems quite satisfactory, he said. He has had no experience, he said, in lining small pipes.

Mr. Brush asked about the effect of the lining on the quality of the water due to leaching action. Mr. LaDue said that no trouble had been noted due to leaching of the cement.

In the paper, "Manifold Meter Setting," A. S. Hibbs, Superintendent, Water Works, Chillicothe, pointed out the advantages of using several

(*Continued on page 49*)

George E. Willcomb, Supervising Chemist of the Albany, N. Y., Filtration Plant, and also a Consulting Sanitary Engineer, died recently at Albany. While supervising Albany's filtration plant, Mr. Willcomb was not a municipal employee but served under a somewhat unusual arrangement as an employee of the Bender Laboratory which contracts to supervise the city's filtration plant.

Mr. Willcomb was active in Association affairs and in the water treatment field, his most recent and obvious contributions being a paper and discussion at the A. W. W. A. Annual Convention in 1939. He had been a member since 1922.

(Continued from page 48)

small meters instead of one large meter on account of the high maintenance costs of compound meters and the loss due to registration with low flows. The water department has adopted the use of multiple settings of 2-inch disc meters. Several other advantages were pointed out including easier repair and the carrying of fewer repair parts in stock. Repairs can be made to one meter at a time without discontinuing metering by the remaining ones.

Mr. Erion questioned whether the removal of the bypass which is required around large meters would be permitted.

In his paper, "Troubles with Joint Materials," N. J. Humason, Superintendent of Filtration, Elyria, recounted his trouble with bacteria contamination of new pipe lines when laid with jute packing. The use of rubber packing has completely removed this trouble, he said.

"Advantages of a Water Works Machine Shop" by W. W. Morehouse, Director of Water Works, Dayton: In a large plant a machine shop is necessary for making repairs. At Dayton where there were some old fire hydrants for which repairs could no longer be obtained, they began making their own repairs and finally began making their own fire hydrants.

Mr. Brush asked him about the relative cost of making them as against

(Continued on page 50)

CLEAN YOUR WATER MAINS

One does not have to be an expert mathematician to figure out that a clogged water main calls for a stronger pressure and that in turn calls for more coal—and literally burning up money. We can show you how to get dollar for dollar value out of every ton of coal. We can show you how to clean the water mains quickly and cheaply. Send us your address—that's all we ask of you.

National Water Main Cleaning Co.

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7103 Dale Ave., St. Louis, Mo.
406 Florida Theatre Bldg., Jacksonville, Fla.
3812 Castellar St., Omaha, Neb.
205 West Wacker Drive, Chicago, Ill.
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Canada

(*Continued from page 49*)

buying them, and Mr. Moorehouse replied that they are saving some money.

John Gettrust, Superintendent, Pumping and Filtration, Akron, speaking on "Tastes and Odors in Distribution Lines," said they are due to the decomposition of algae in the lines. These algae are passing through the filters. Proof of the fact that algae are passing the filters can be found at many filter plants by putting a cotton filter plug over a faucet and allowing several gallons of water to flow through. Invariably at the Akron plant the cotton plug collects some algae.

"Ohio River Pollution Survey" was described by Maurice LeBosquet. This survey covered the 200,000 sq. mi. of drainage area of the Ohio River and its tributaries and about 2,000 industrial plants which are producing wastes. One of the great problems in handling industrial wastes, he said, is that just about the time the proper method of treating the waste is determined, the manufacturing process is changed and a different type of waste is produced.

The meeting closed with a visit to the new Cincinnati filtration plant where a box lunch was served.

Officers were elected as follows: Chairman, F. P. Fischer, Representative, Wallace & Tiernan Co.; Vice-Chairman, E. E. Smith, General Supt.,

(*Continued on page 53*)

(*Continued from page viii*)

Junior Members

MELBO, IRENE MARION. Lab. Asst., Water Dept. Lab., City Hall, Bellingham, Wash.

Affiliates

RUDISILL, RALPH W. Supt. Water Plant, 313 W. Marion St., Monticello, Ill.
SMITH, ORVAL H. Lab. Asst., Cherry River Paper Co., 96 Front St., Richwood, W. Va.

Reinstatements—Active Members

BEAN, ELWOOD L. 5821 Hadfield St., Philadelphia, Pa.
MARSHALL, GEORGE A. Chief Clerk, Bureau of Water, 108 City Hall, Portland, Ore.
WEST, FRANCIS D. Dist. Sales Mgr., Permutit Co. of New York, 102 Rugby Rd., Syracuse, N. Y.

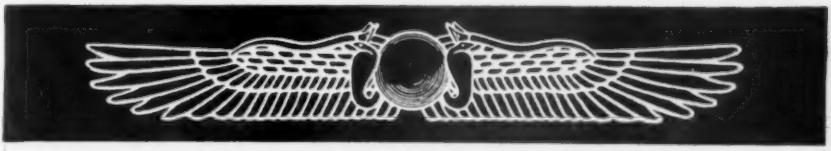
Reinstatements—Corporate Members

OBRAS SANITARIAS DE LA NACION. Enrique Butty, Pres., Buenos Aires, Argentina, South America

Resignations—Active Members

MAGEE, CARROLL J. 409 E. Archer St., Tulsa, Okla.
MURPHY, FRANK J. Supt., Div. of Meters, Milwaukee Water Works, City Hall, Milwaukee, Wis.
STEWART, J. R. Town Engr., Renfrew, Ont., Canada
TAYLOR, FLOYD B. Eng. Asst., Pennsylvania Dept. of Health, 222 S. 49th St., Philadelphia, Pa.
TAYLOR, STEPHEN H. 117 Elm St., Saco, Me.

(*Continued on page 53*)



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IC1-21

How you can save on each fire hydrant breakage repair

enough to pay for a new hydrant

FIGURES obtained from representative large, medium-size and small municipalities all over the country indicate that the total cost of repairing a broken fire hydrant, including *all* the items, such as excavating and repaving, which should be considered, averages about $75.00 and in many localities reaches $100.00.

This cost can be reduced to an insignificant amount, and striking aggregate savings can be made in your yearly fire hydrant repair expenses, by using

Kennedy SAFETOP Fire Hydrants

(Reg. U. S. Pat. Off.)

These hydrants are fully as strong as any other hydrant on the market, but if struck by a smashing impact, the damage is strictly localized to a patented safety breakable section. The broken parts can be replaced in less than half an hour, by one man, without excavating or shutting off the water service, and at a total cost of $10.00.

This means that, as compared to the cost of repairing fire hydrants now commonly used, each *SAFETOP repair will save enough to pay for a new hydrant.*

Every water works superintendent should be posted on this important development. Write for full information on the Kennedy SAFETOP Fire Hydrant, *how it can be adapted to existing hydrants at low cost*, and its many exclusive advantages.

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KENNEDY
SAFETOP FIRE HYDRANT
REG. U.S. PAT. OFF.

(*Continued from page 50*)

Water Works, Lima.; Trustee (1944), Carl Eberling, Supt. Water Works, Cincinnati.; Trustee (1942), to fill Smith's unexpired term, Paul Cook, Lake County Sanitary Engineer, Painesville; Secretary-Treasurer, T. R. Lathrop, Assistant Engineer, Ohio Department of Health, Columbus.

T. R. LATHROP
Secretary-Treasurer.

"Fire Defense Programs—Suggestions for Defense Councils and Committees" is a staff report available for 10 cents from the National Fire Protection Association, 60 Batterymarch St., Boston. It is a 12-page booklet filled with detailed information and suggestions.

A. Y. McDonald Mfg. Co. of Dubuque, Iowa, recently issued an ingenious folder describing the Company's line of lead and copper goosenecks, copper and lead couplings, corporation stops, service boxes and curb stops.

Thomas J. Skinker has been appointed Water Commissioner at St. Louis in part of a shakeup in the Water Divison by Director of Public Utilities Max H. Doyne, recently appointed by the new mayor. John B. Dean, formerly Water Commissioner, is now in charge of the Supply and Purifying Sections of the Water Division replacing E. E. Easterday who has been transferred to a post at the head of the Distribution Section, a job from which Frank Kriz resigned.

(*Continued from page 50*)

Resignations—Corporate Members

HELENA, CITY OF. A. J. Roberts, Mayor, Helena, Mont.

Resignations—Associate Members

UNITED STATES STEEL CORP. C. R. Moffatt, Director of Exhibits, 434—5th Ave., Pittsburgh, Pa.

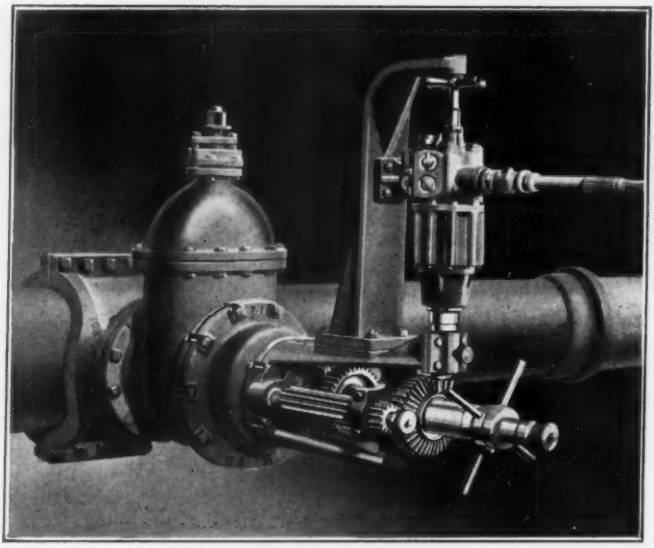
Deaths—Active Members

FIELD, FREDERICK E. Engr., Water Board, 135 Ballantyne Ave., Montreal, Que., Canada
GARRISON, J. M. Supt., Water & Light Dept., Rock Hill, S. C.
GOBLE, W. F. Mgr., California Water & Telephone Co., 2130 Huntington Drive, San Marino, Calif.
KEENE, R. W. Pacific Coast Mgr., Hersey Mfg. Co., 450 E. Third St., Los Angeles, Calif.
LYNCH, JAMES H., JR. 2841 Parkwood Ave., Toledo, Ohio
MACMILLAN, J. A. Mgr. of Water Works, Charlottetown, P.E.I., Canada
SKIDMORE, C. E. Supt., Water Dept., 1752—10th St., Reedley, Calif.
WOOD, GEORGE PILLSBURY. Supt., Board of Water Comrs., Municipal Bldg., Peekskill, N. Y.

Transfers Between Sections

DEMARTINI, FRANK EDWARD. From Ohio to Four States
DIXON, G. GALE. From New York to Four States
KULIN, HARVEY J. From Illinois to Indiana
STONE, WYMAN R. From South America to New England
WILBUR, C. C. From Minnesota to Four States

WHY INTERRUPT SERVICE?



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TAPPING operations are made comparatively simple through the use of SMITH TAPPING MACHINES and the permanent sleeve.

A special tapping valve permanently attached to sleeve and a SMITH TAPPING MACHINE temporarily attached to the valve. The valve is fully opened, cutter on tapping machine is forced against main and the cutting begins. It takes but a short time, then the cutter with the cut-out piece is pulled back, the valve closed, the tapping machine removed and the new main can be attached to valve.

SMITH TAPPING MACHINES are made in sizes from 2-in. to 42-in. While the smaller sizes are standard equipment in many water plants, the larger ones may be rented. . . . We usually send experienced operators with the large machines.

The A. P. Smith Manufacturing Company

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Smith Tapping Machines—Tapping Sleeves and Valves—O'Brien Hydrants—Valve-Inserting Machines—Removable Plugs, Pipe Cutting Machines—Corporation Tapping Machines—Gas Tee-Inserting Machines—Corporation Cocks—Federal Water Meters

Showing installation of 72" I.D. Dresser coupling made between settling and coagulation basins at Cincinnati water purification plant.

Big ones at CINCINNATI!

ON LINES OF EVERY SIZE!
Lines of all diameters are being Dresser-coupled in cities like these
Danville, Ky. Ironwood, Mich.
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Fort Smith, Ark. Ponca City, Okla.

As great in diameter as a six-foot man is tall, are these Cincinnati twin raw-water mains, constructed during 1936 at the water purification plant and joined with Dresser Couplings. A few years before, another Cincinnati water line (48″) was also Dresser-coupled.

FIVE REASONS WHY MODERN WATER LINES ARE DRESSER-COUPLED:

1. **PERMANENT TIGHTNESS**—proved for 90 years, on 250,000 miles of pipe.
2. **FLEXIBILITY**—normal pipe movements—present in every line—are absorbed.
3. **SIMPLICITY**—joints are "factory-made"; ordinary labor can install.
4. **STRENGTH**—predetermined; joints safely withstand any specified pressure.
5. **TRUE ECONOMY**—a truly lower joint cost throughout the life of the line.

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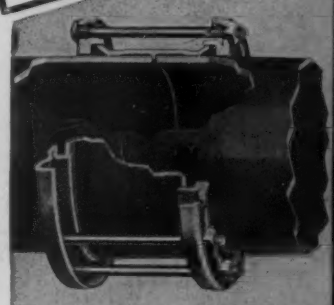

Cutaway view of Dresser Coupling, Style 38, showing working principle. Note that plain-end pipe is used. The *resilient* rubber-compound gaskets, flexing with the pipe, safely absorb pipe movements, thus preventing failures that often occur with rigid joints.

THE MODERN TREND IS TO DRESSER COUPLINGS

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The pioneer self-caulking material for c.i. pipe.
Tested and used for over 30 years.
Saves at least 75%

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